

LEGEND: ◆ July 2011 Stream Flow Survey - Base Flow Conditions
 ▲ July 2011 Daily Flow as Estimated from Water Elevation

NOTES:

1. July 2011 flows (three day event) were measured using a Marsh McBernie flow meter. Flows were calculated assuming a trapezoid configuration of the brook.
2. Daily flow at water level meters was estimated using a log-based rating curve, generated from monthly flow and elevation field data (recorded with Solinst Junior Model M5, pressure transducer).
3. Flows represent total measured in-stream flows. Flows from culverts and tributaries are not presented in figure.

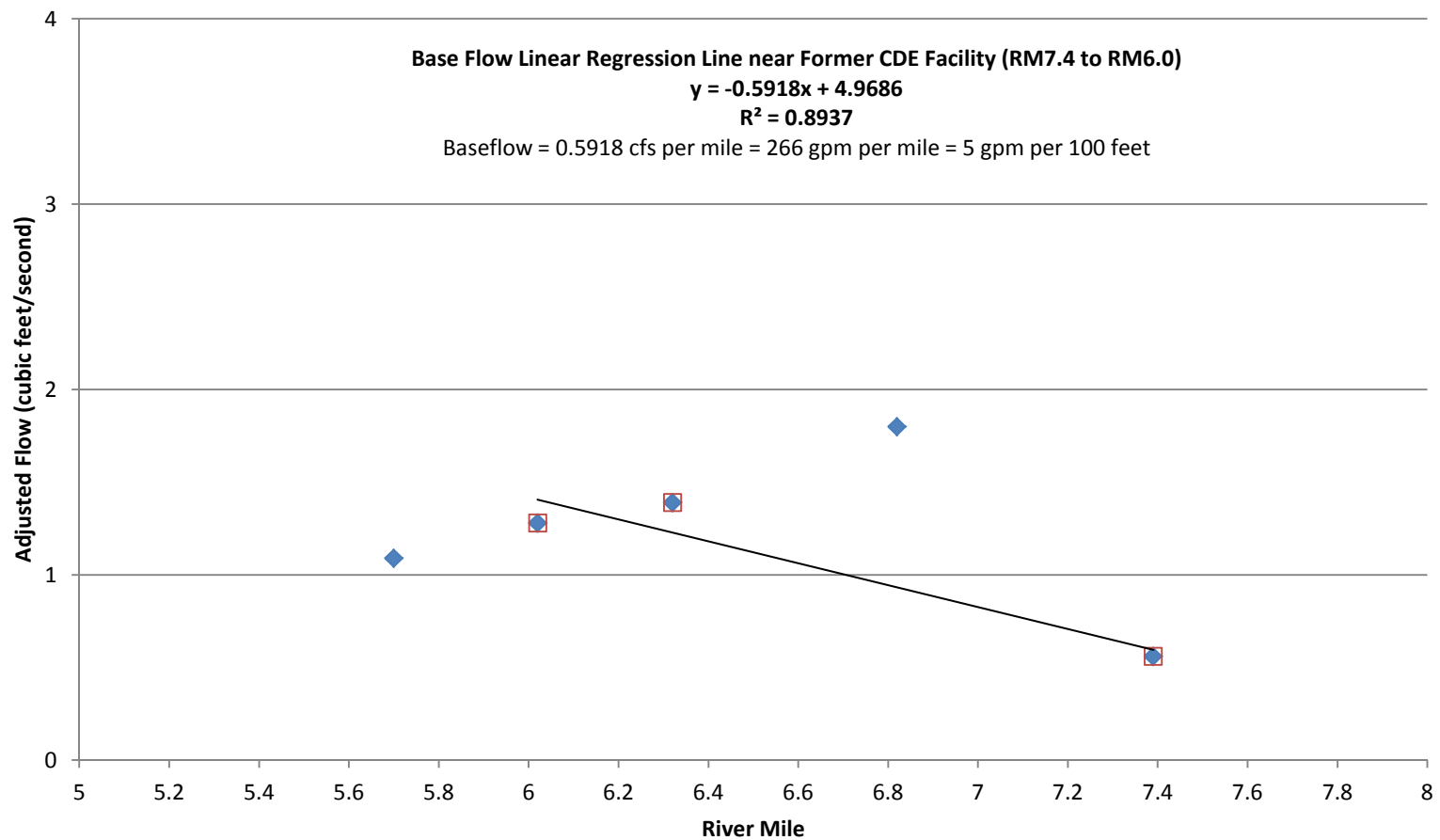


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Bound Brook Stream Flow Survey: July 2011
 Bound Brook OU4 RI/FS

2013

FIGURE 7-1



LEGEND: ◆ July 2011 Stream Flow Survey - Base Flow Conditions (adjusted for culvert contribution at RM6.3)
 ◆ July 2011 Stream Flow Survey - Data included in regression

NOTES:
 1. July 2011 flows were measured using a Marsh McBernie flow meter. Flows were calculated assuming a trapezoid configuration of the brook.
 2. Flows were adjusted to remove contributions from tributaries and culverts.
 3. Linear regression line calculated using Microsoft Excel software for data measured between RM6.0 and RM7.4. Cedar Brook converges with Bound Brook at RM5.75.



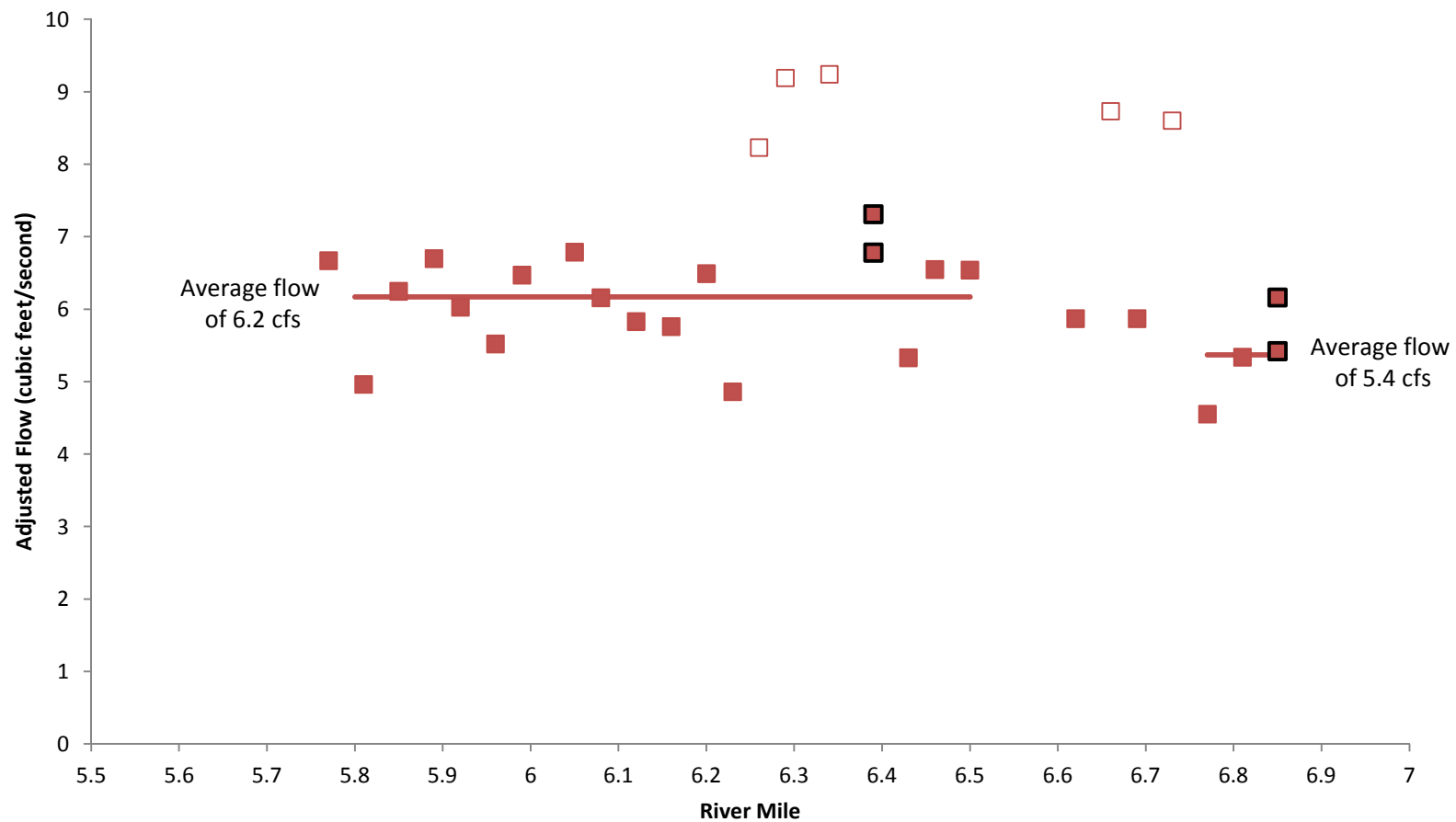
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**Bound Brook Estimated Base Flow near the
 Former CDE Facility**
Bound Brook OU4 RI/FS

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FIGURE 7-2

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LEGEND:

- May 2012 Stream Flow Survey (values included in average)
- May 2012 Stream Flow Survey (values not included in average)
- ▣ May 2012 Stream Flow Survey (replicate measurements collected on the second day)

NOTES:

1. May 2012 flows (two day event) were measured using a Marsh McBernie flow meter. Flows were calculated assuming a trapezoid configuration of the brook.
2. Flows were adjusted to remove contributions from tributaries and culverts.
3. Elevated flow values (marked as hollow red squares) are likely erroneous and associated with changes in channel geometry or incorrect velocity measurements.
4. Stream flow survey occurred over two days. Symbols with black outline represent replicate measurements to document error in flow during the course of the survey.



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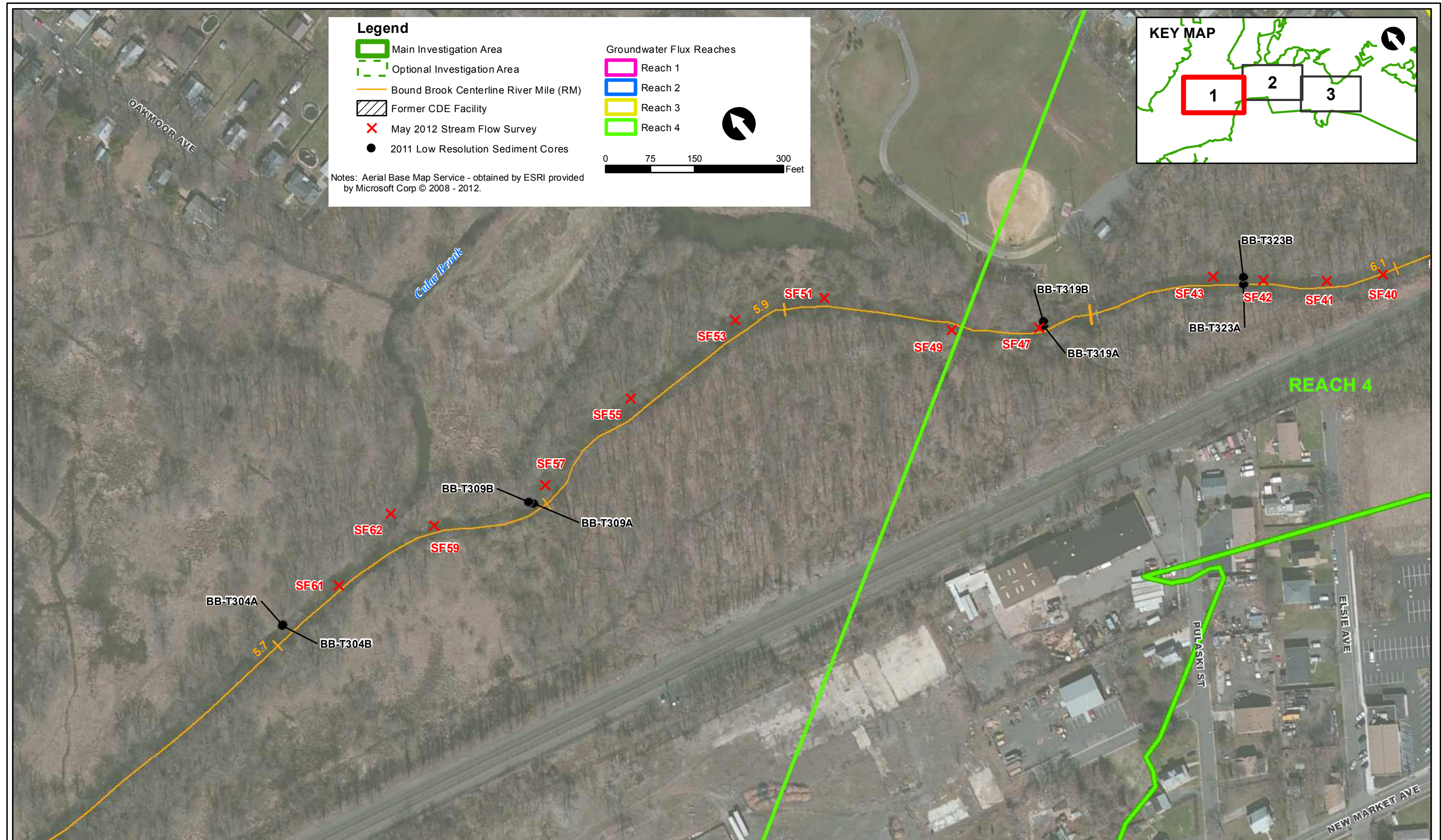
Bound Brook Stream Flow Survey: May 2012

Bound Brook OU4 RI/FS

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FIGURE 7-3

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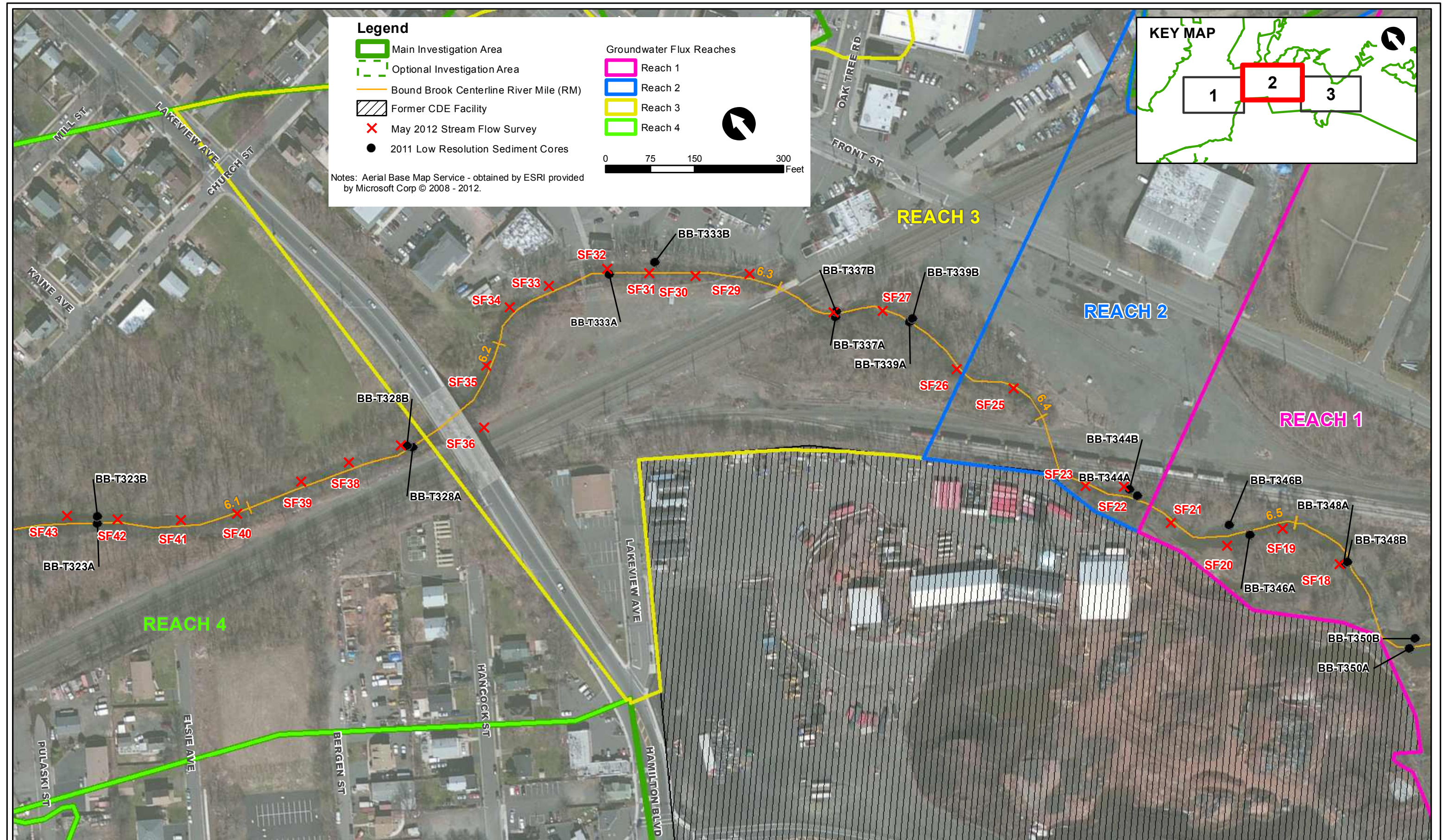
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Stream Flow Survey and Water Quality Sampling Locations
Bound Brook OU4 RI/FS

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Figure 7-4
Sheet 1 of 3



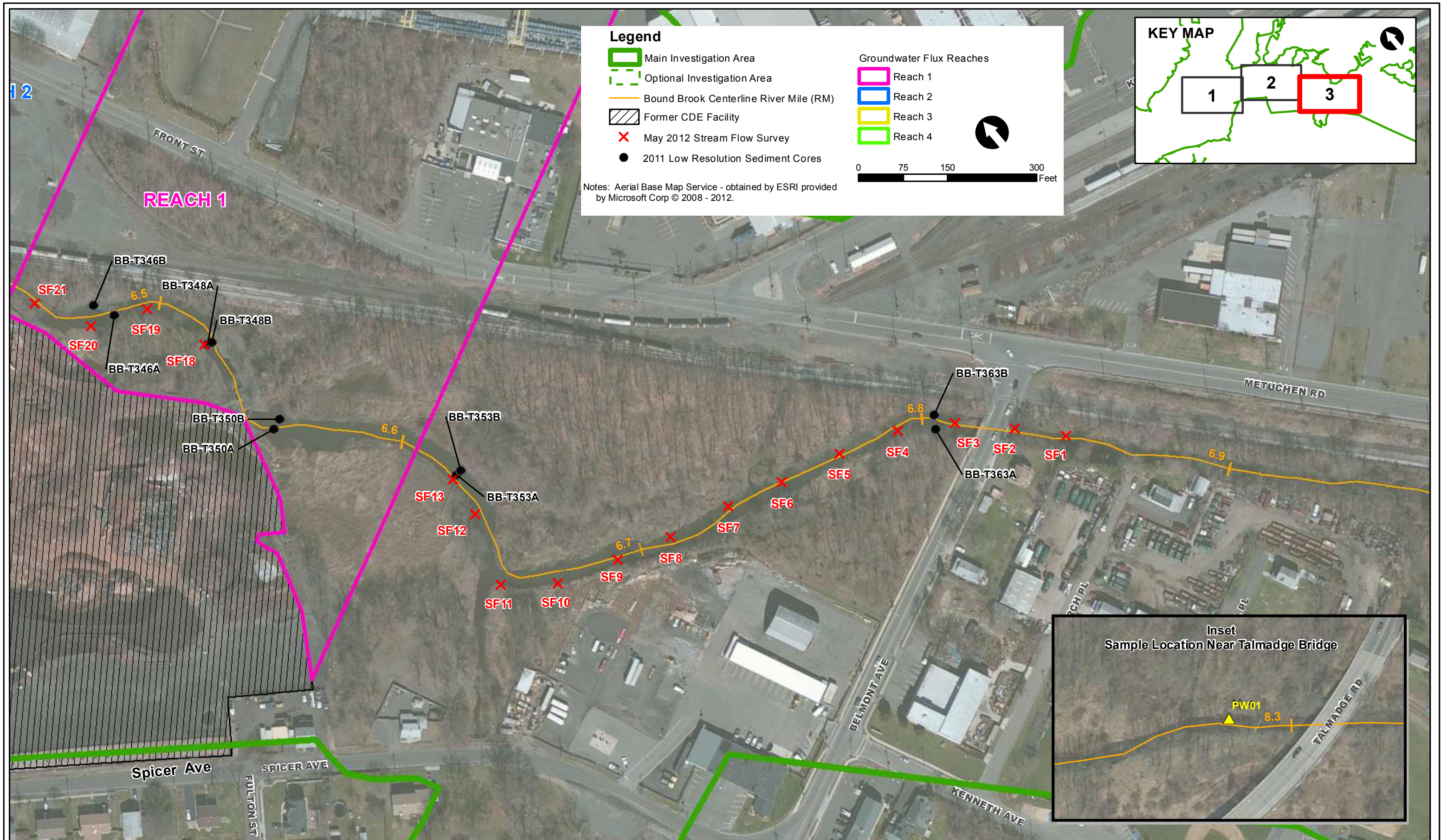
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Stream Flow Survey and Water Quality Sampling Locations
Bound Brook OU4 RI/FS

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Figure 7-4
Sheet 2 of 3



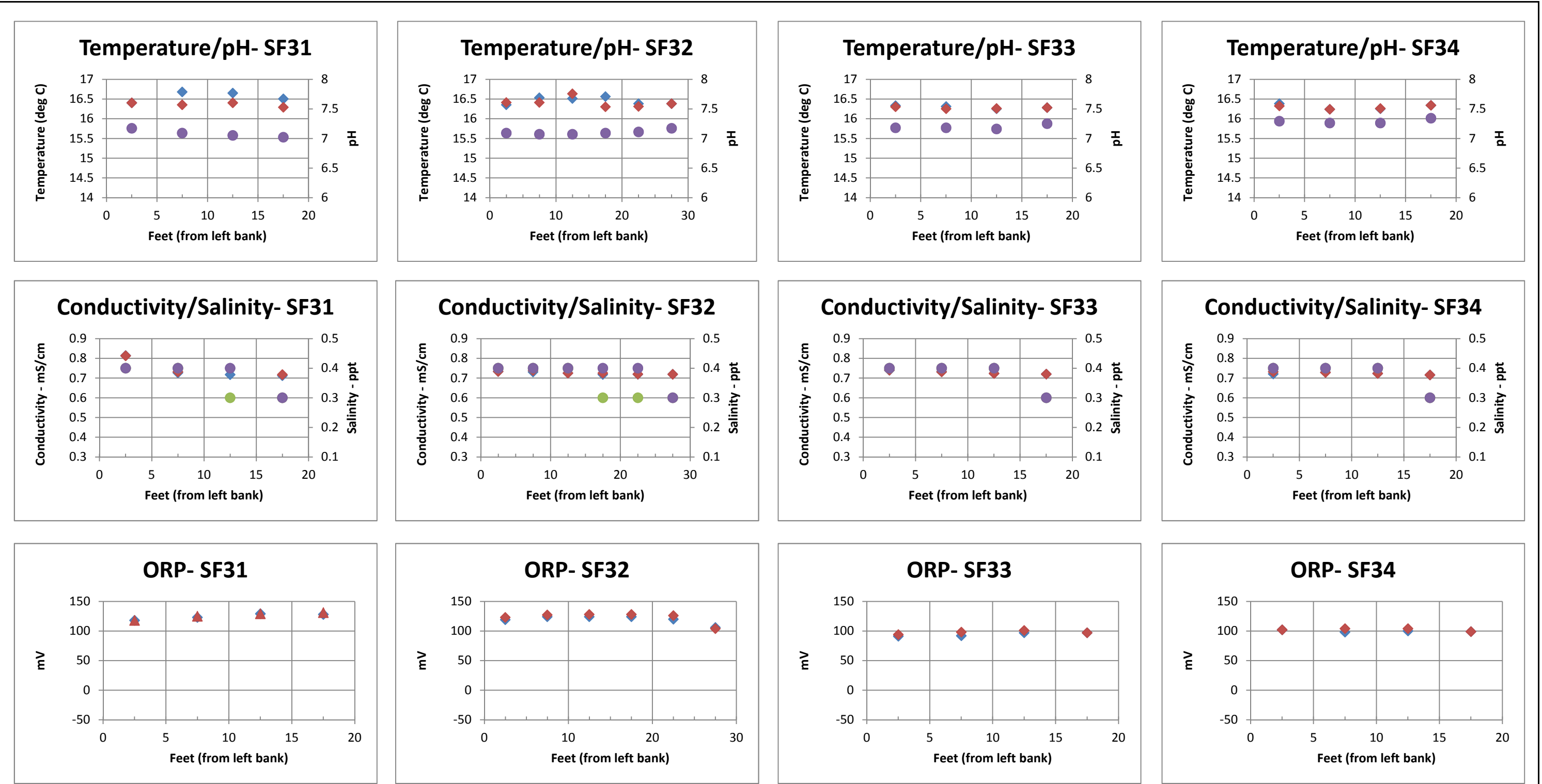
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Stream Flow Survey and Water Quality Sampling Locations
Bound Brook OU4 RI/FS

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Figure 7-4
Sheet 3 of 3



LEGEND: ◆ Conductivity, Temperature, and ORP at top of water column
◆ Conductivity, Temperature, and ORP at bottom of water column
● Salinity and pH at top of water column
● Salinity and pH at bottom of water column

NOTES:
1. Measurements collected with a Horiba U52 (calibrated by manufacturer).
2. ORP denotes "Oxidation Reduction Potential" and "SF" denotes Stream Flow Transect number. Transects were spaced approximately 100 ft apart from RM5.7 to RM6.9. SF31 through SF34 were located between RM6.2 and RM6.3.
3. Stream Flow/Water Quality Survey conducted between May 7-9, 2012. Refer to Appendix F for complete set of water quality measurements.

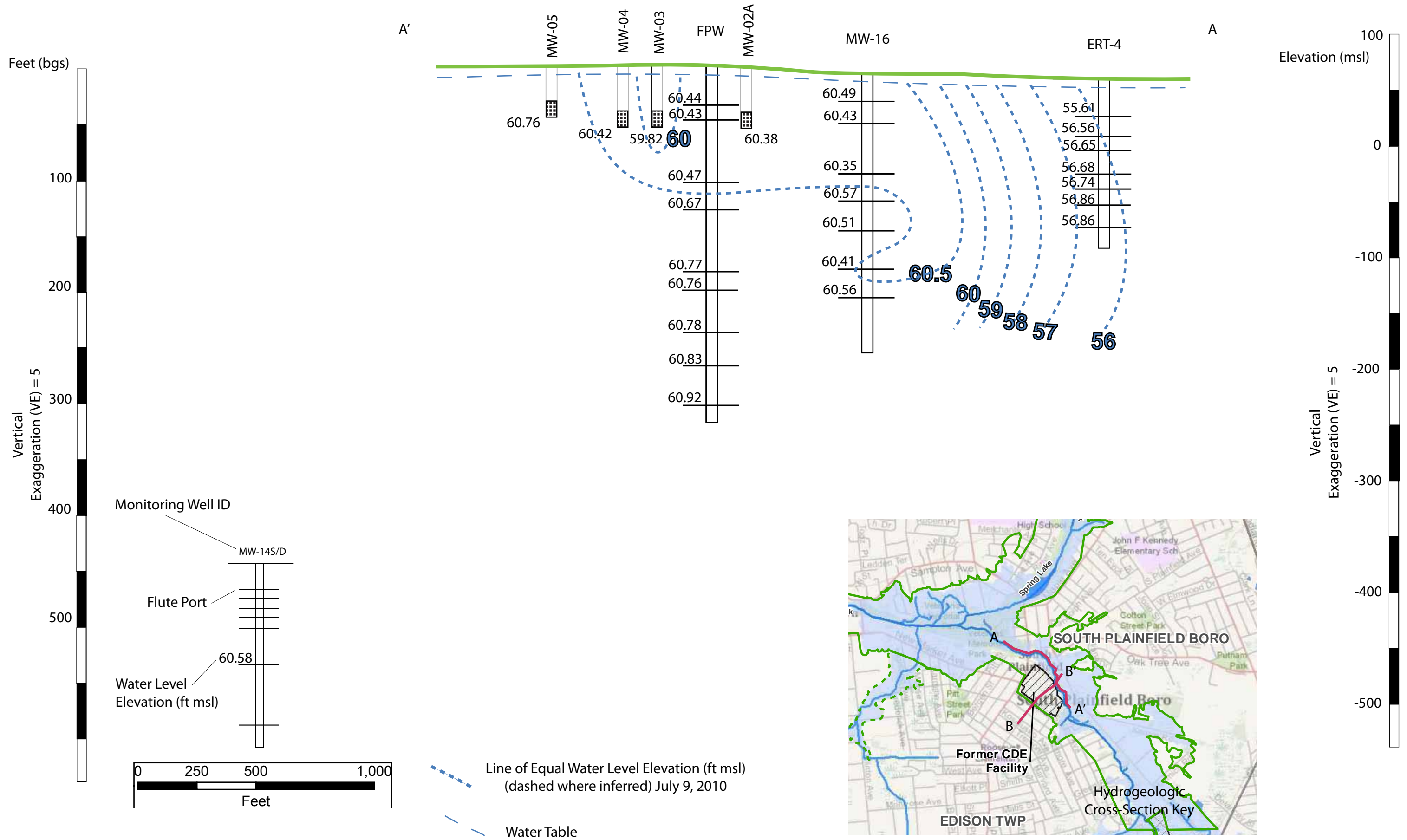


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Water Quality Field Measurements along Transects SF31 to SF34
May 2012 Stream Flow Survey
Bound Brook OU4 RI/FS

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FIGURE 7-5

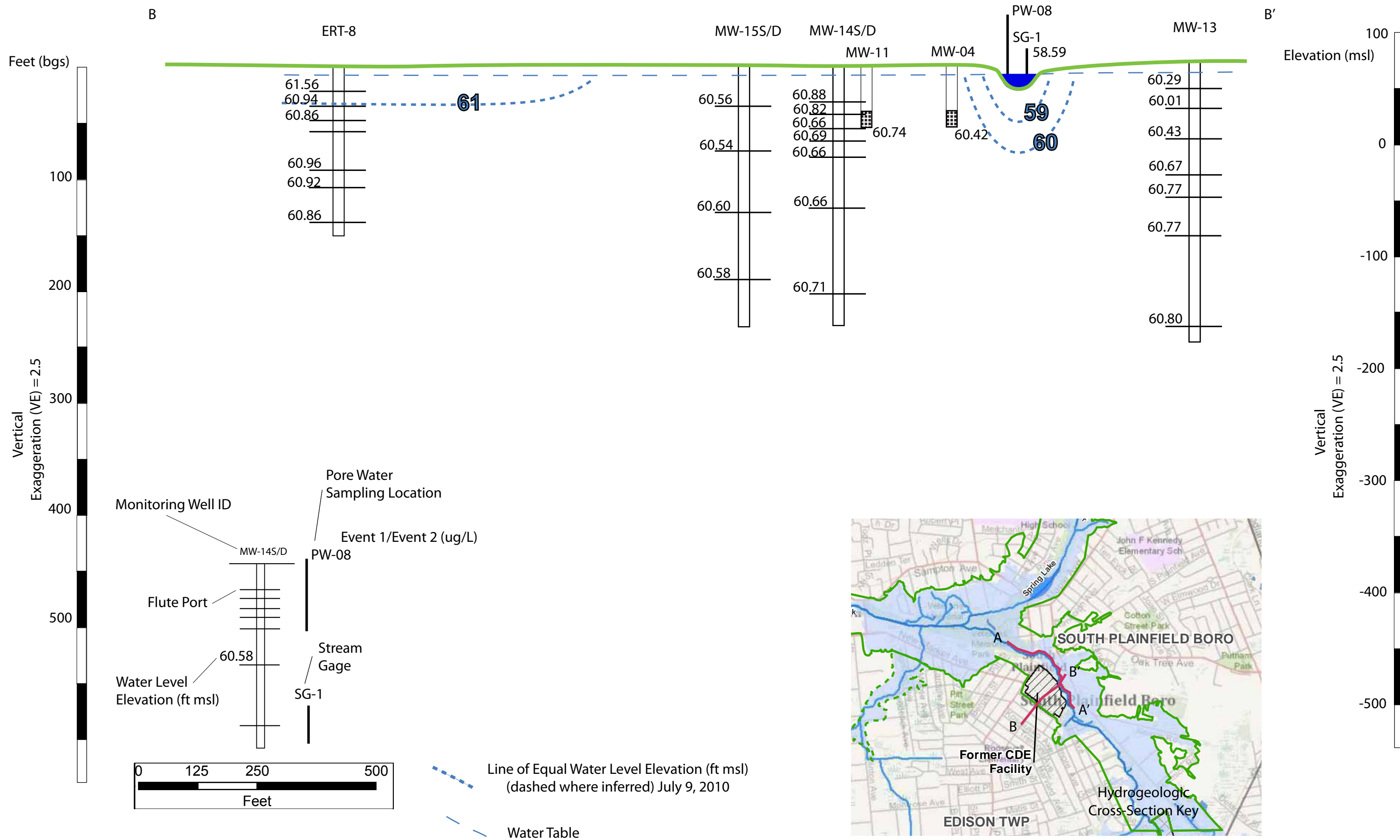


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OU3 Groundwater and Surface Water Elevations
with Hydraulic Contours (A-A')
Bound Brook OU4 RI/FS

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Figure 7-6

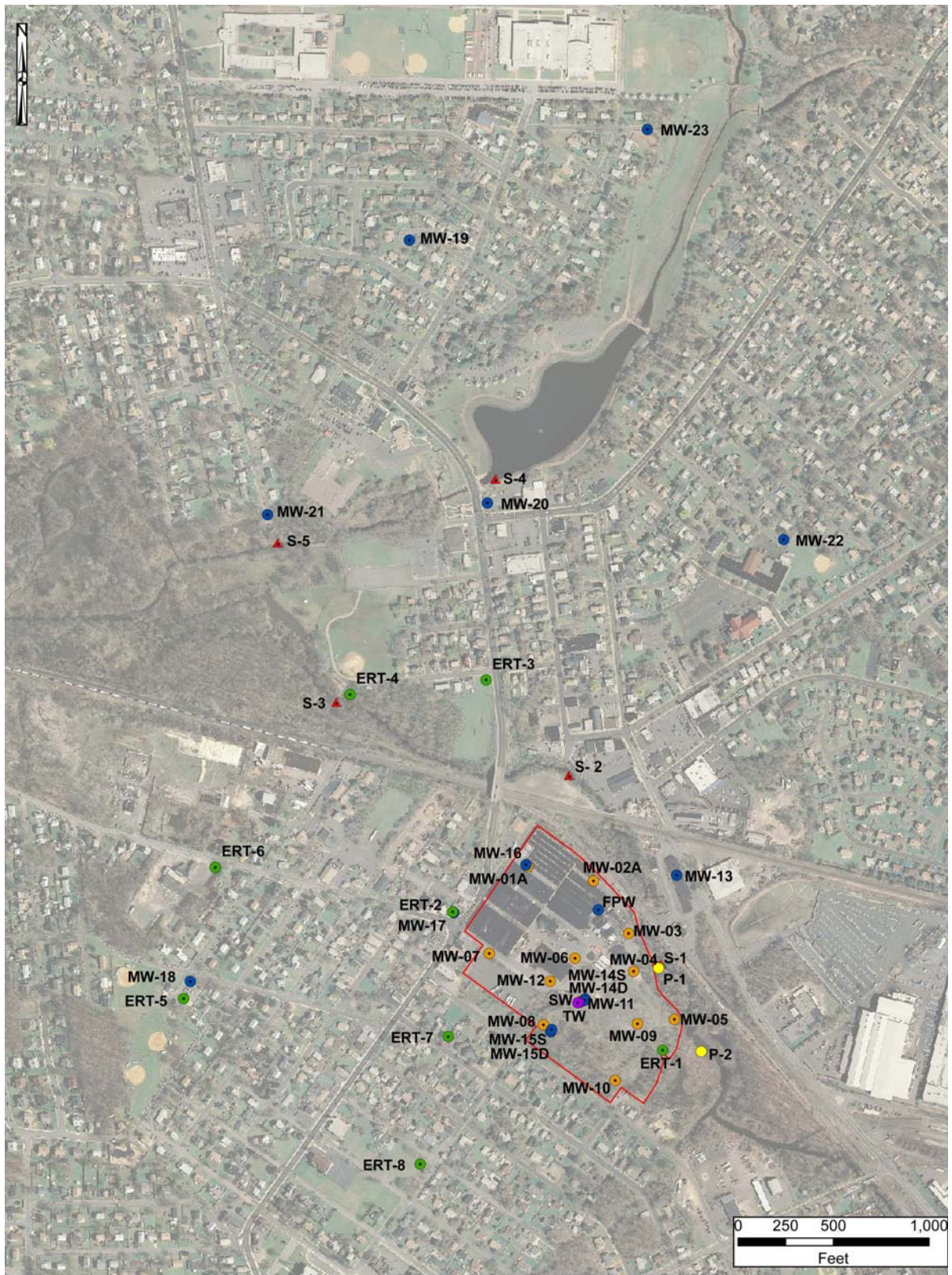


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OU3 Groundwater and Surface Water Elevations
with Hydraulic Contours (B-B')
Bound Brook OU4 RI/FS

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Figure 7-7



LEGEND:

- | | |
|--|---|
| Former CDE Facility | ● 2009-2010 Flute™ Well |
| ● 2008 Flute™ Well | ● Shallow Bedrock Monitoring Well |
| ● Test Well | ● Piezometer |
| ▲ Staff Gage | |

NOTES:

Reference: Figure 3-1 from Final Remedial Investigation Report Operable Unit 03: Ground Water (LBG/MP, 2012)



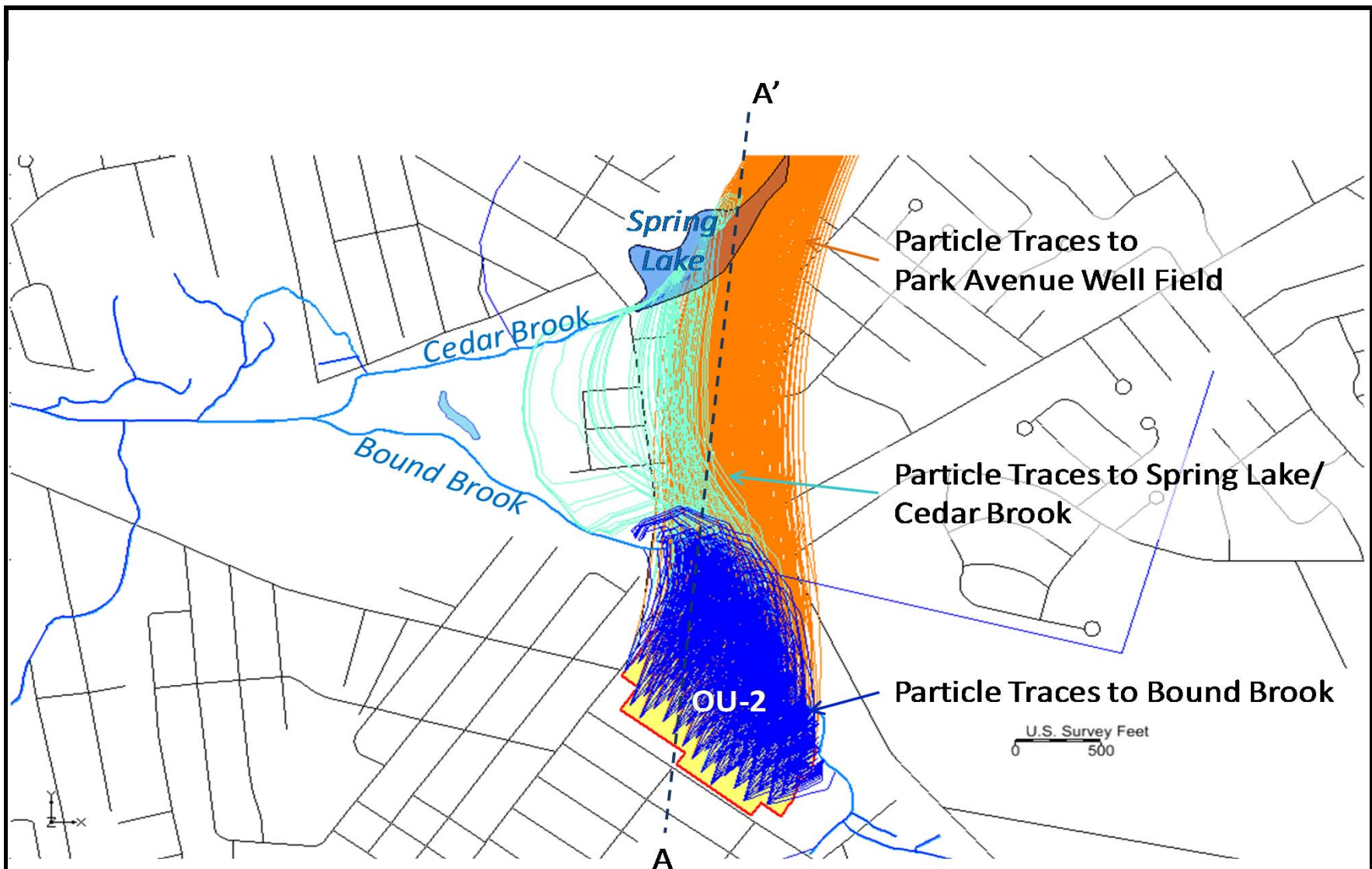
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**Monitoring Well, Test Well, Piezometer,
and Staff Gage Locations**

Bound Brook OU4 RI/FS

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FIGURE 7-8

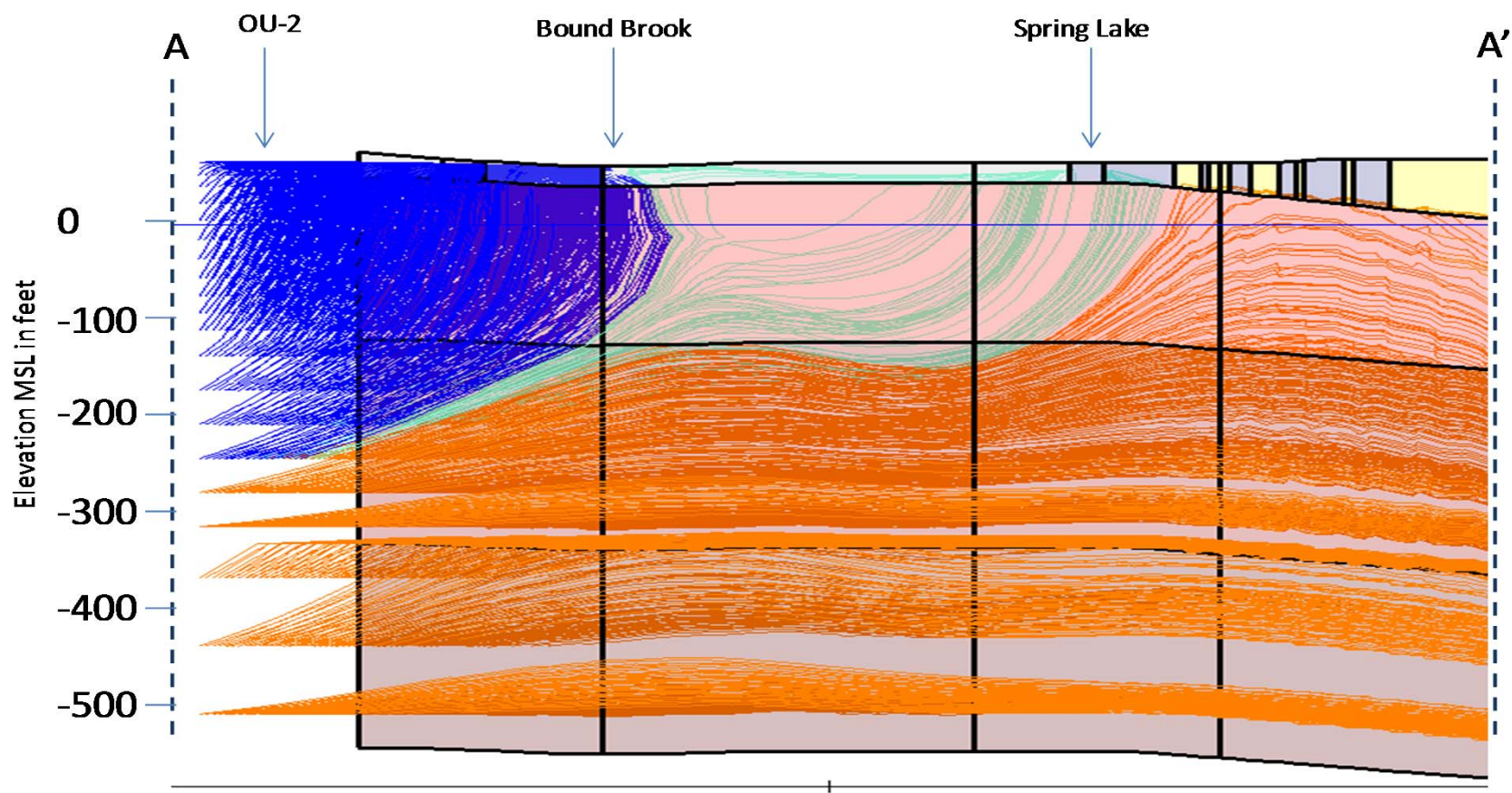


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**OU3 RI Model-Predicted Particle Traces from
Former CDE Facility Based on 2010 Pumping**
Bound Brook OU4 RI/FS

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Figure 7-9a



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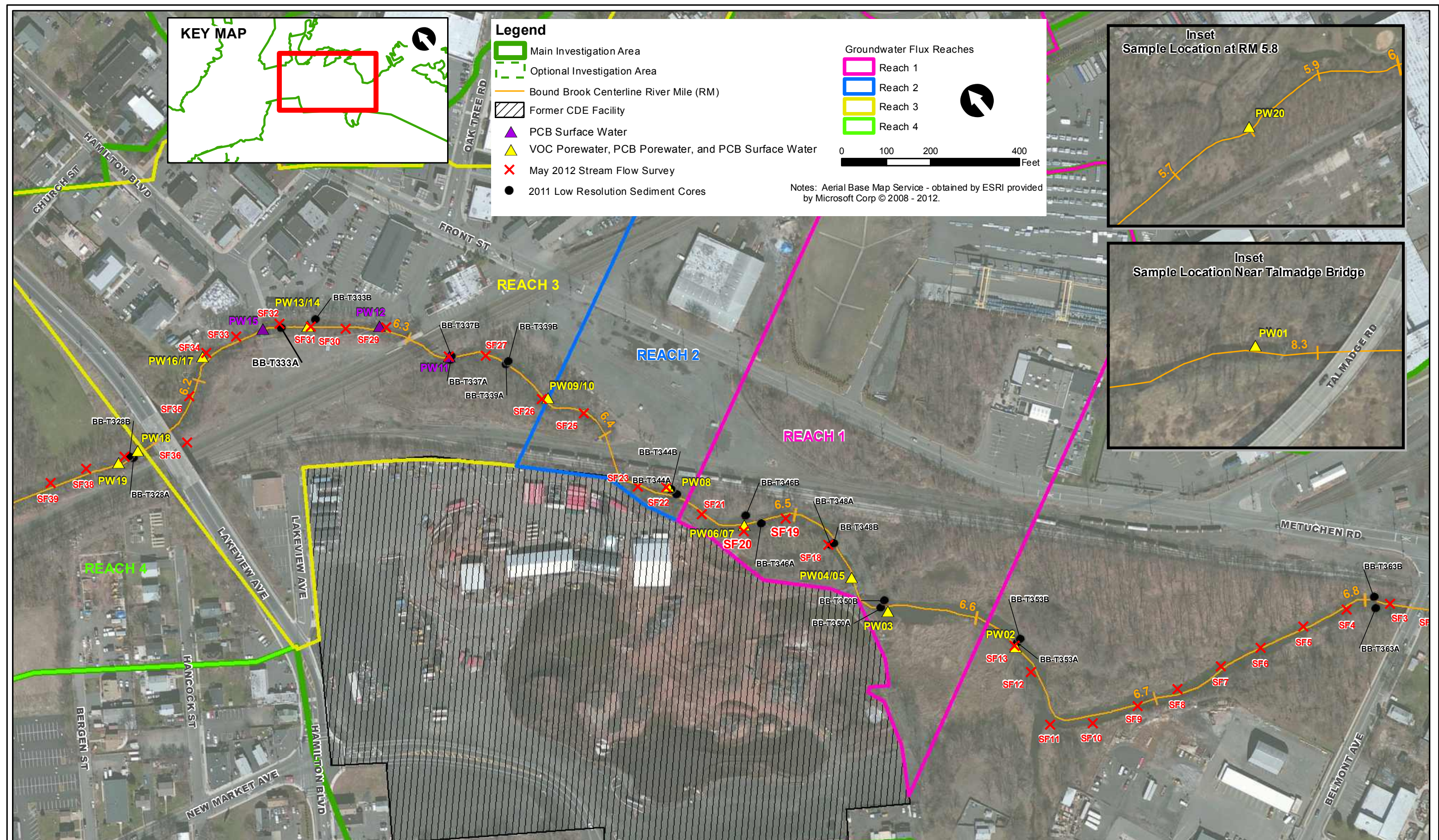
**OU3 RI Model-Predicted Particle Traces from
Former CDE Facility Based on 2010 Pumping**

Cross Section A - A'
Bound Brook OU4 RI/FS

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Figure 7-9b

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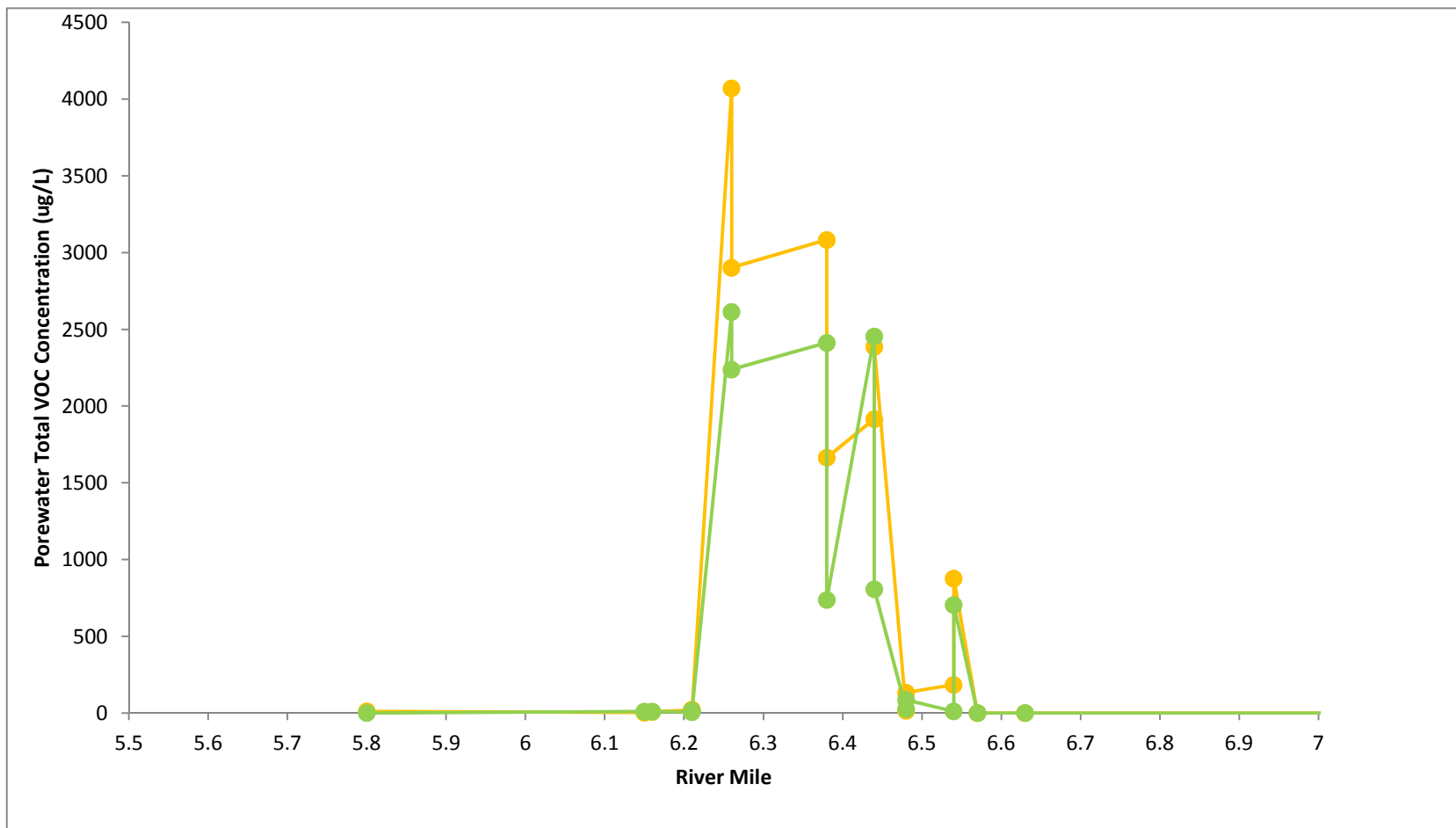


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Porewater and Surface Water Sampling Locations
Bound Brook OU4 RI/FS

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Figure 7-10



LEGEND:

- Porewater Total VOC Concentration (ug/L) - Sampling Event 1
- Porewater Total VOC Concentration (ug/L) - Sampling Event 2

NOTES:

1. Porewater VOC concentrations measured using polyethylene passive diffusion bags deployed for two sampling events. First event: Deployed July 11-17, 2012, Retrieved July 24-25, 2012. Second event: Deployed July 24-25, 2012, Retrieved August 21-24, 2012.
2. It is assumed that the concentration of dissolved VOCs inside the passive diffusion bag reached equilibrium with the surrounding porewater and no further internal corrections on the data were performed.
3. Total VOC represents the summation of detected TCL VOC analytes.



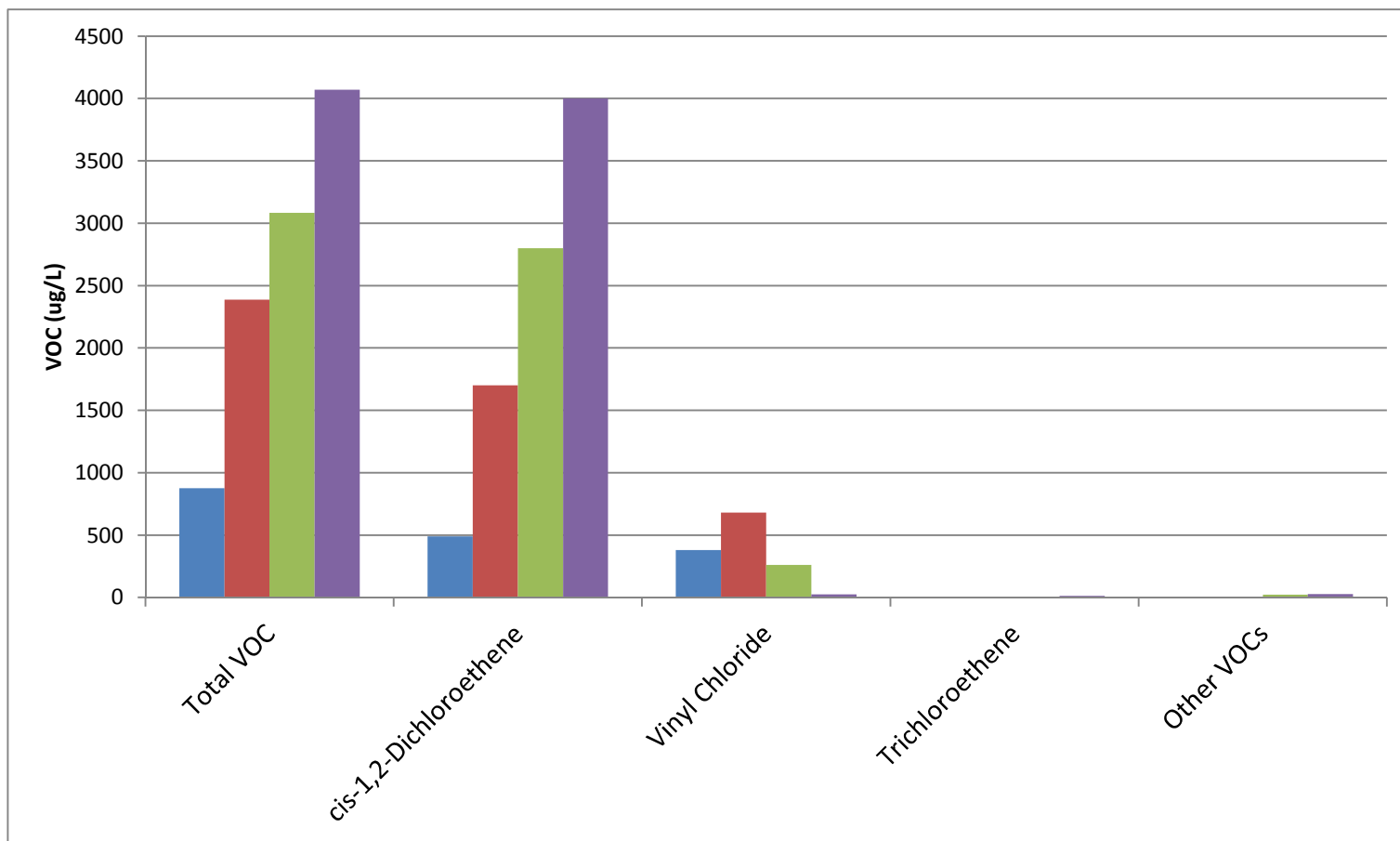
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**Bound Brook Porewater Total VOC
Concentrations near the Former CDE Facility**
Bound Brook OU4 RI/FS

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FIGURE 7-11

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LEGEND:

- RM 6.54 - PW04
- RM 6.44 - PW08
- RM 6.38 - PW10
- RM 6.26 - PW14

NOTES:

1. Porewater VOC concentrations measured using polyethylene passive diffusion bags deployed for two sampling events. First event: Deployed July 11-17, 2012, Retrieved July 24-25, 2012. Second event: Deployed July 24-25, 2012, Retrieved August 21-24, 2012.
2. The 4 locations with the highest Total VOC concentrations are presented.
3. Nondetected concentrations are not included in the Total VOC summation.



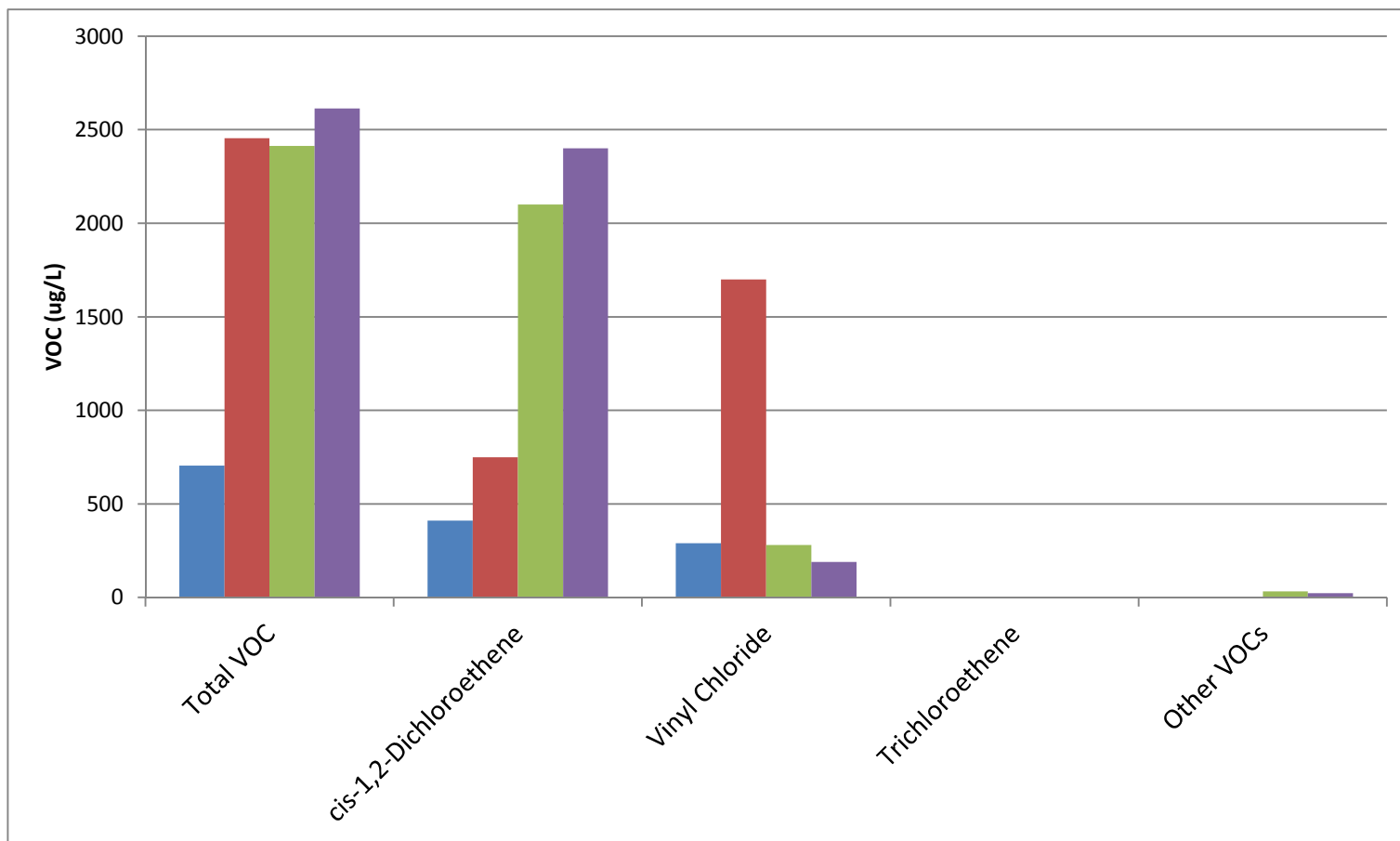
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Comparison of VOC Distribution in Porewater
Samples: Sampling Event 1
Bound Brook OU4 RI/FS

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FIGURE 7-12a

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LEGEND:

- RM 6.54 - PW04
- RM 6.44 - PW08
- RM 6.38 - PW10
- RM 6.26 - PW14

NOTES:

1. Porewater VOC concentrations measured using polyethylene passive diffusion bags deployed for two sampling events. First event: Deployed July 11-17, 2012, Retrieved July 24-25, 2012. Second event: Deployed July 24-25, 2012, Retrieved August 21-24, 2012.
2. The 4 locations with the highest Total VOC concentrations are presented.
3. Nondetected concentrations are not included in the Total VOC summation.



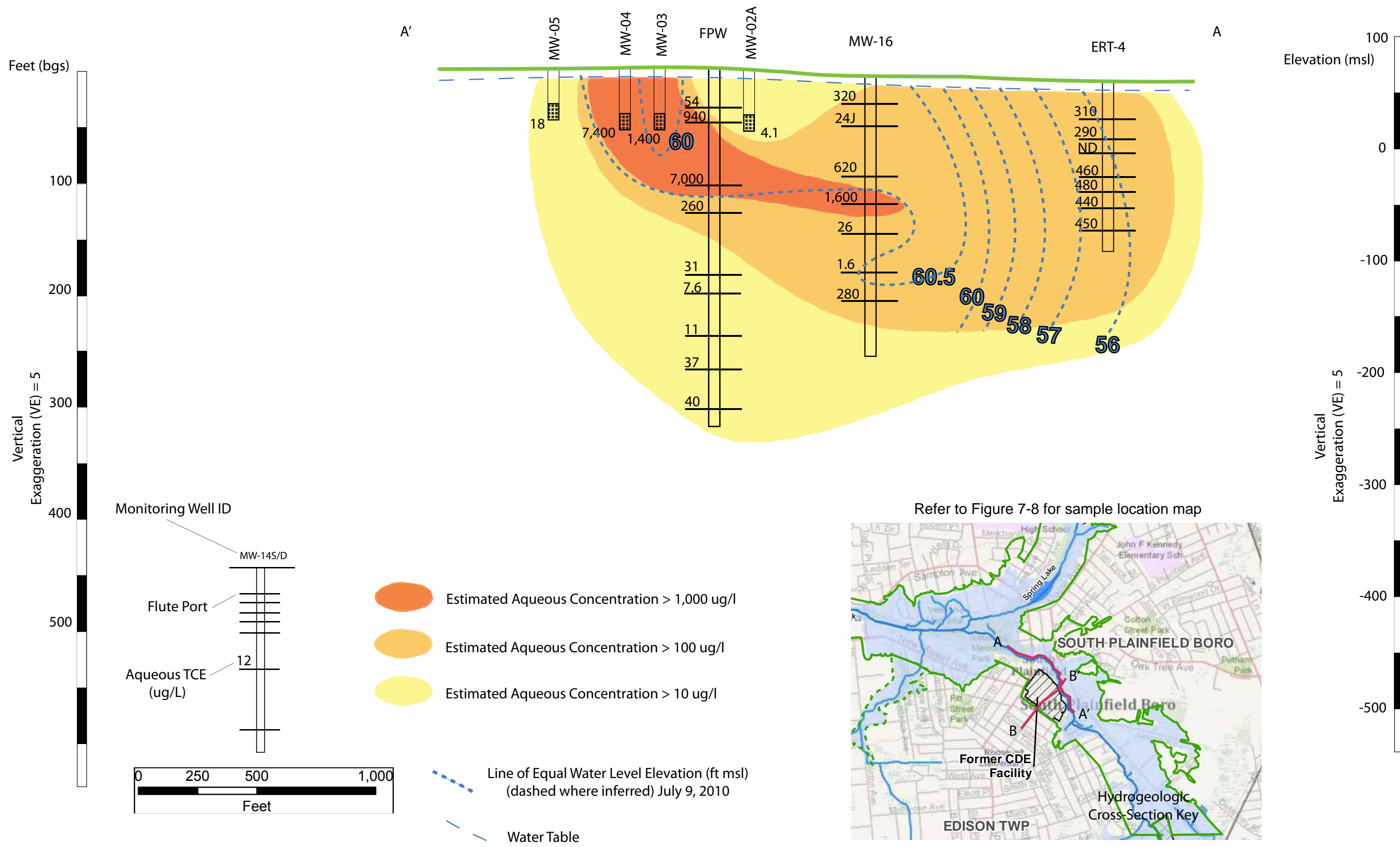
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Comparison of VOC Distribution in Porewater
Samples: Sampling Event 2
Bound Brook OU4 RI/FS

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FIGURE 7-12b

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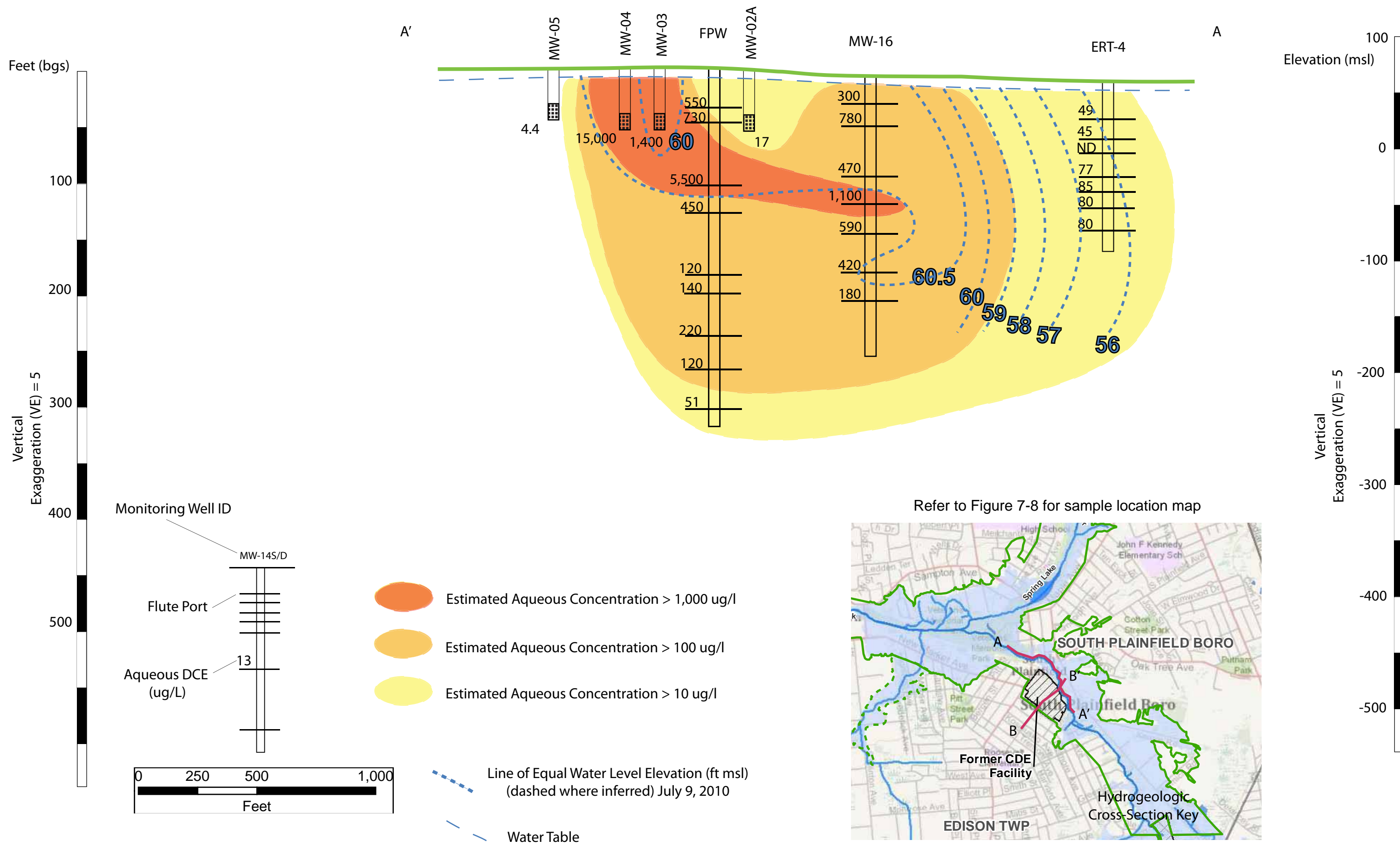


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OU3 Groundwater and OU4 Porewater TCE
Concentrations with Isocontours (A-A')
Bound Brook OU4 RI/FS

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Figure 7-13

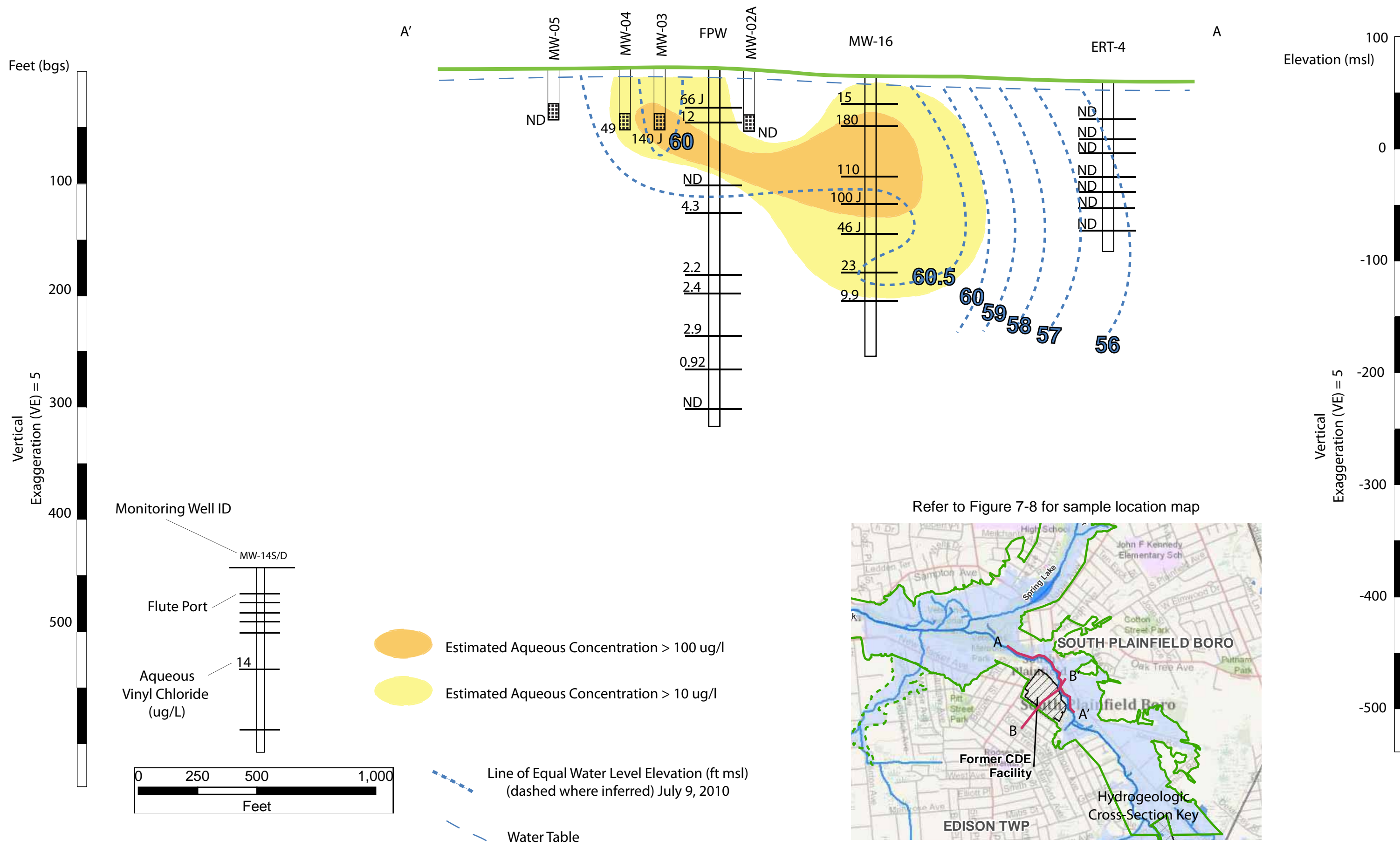


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OU3 Groundwater and OU4 Porewater DCE
Concentrations with Isocontours (A-A')
Bound Brook OU4 RI/FS

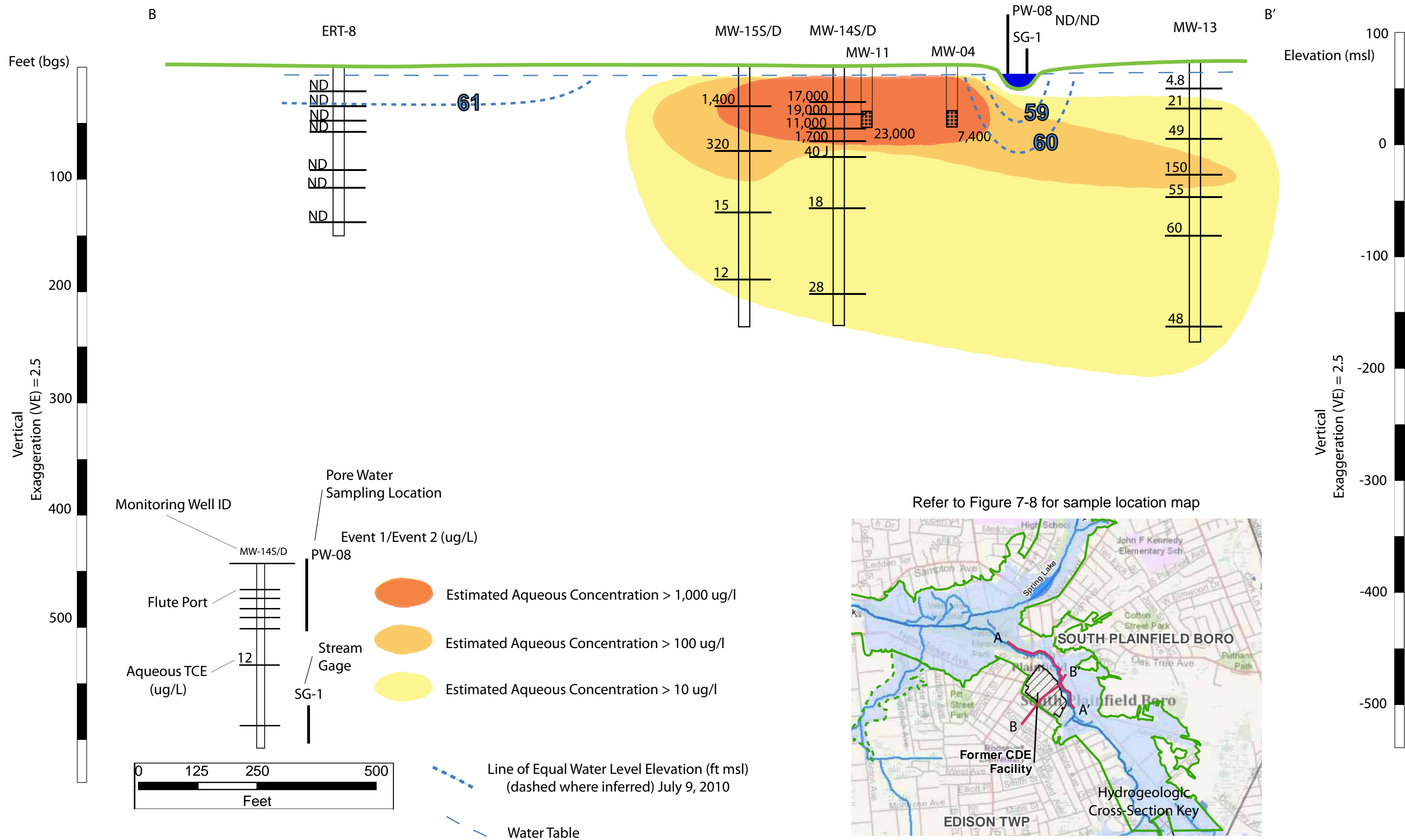
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Figure 7-14



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OU3 Groundwater and OU4 Porewater Vinyl Chloride
Concentrations with Isocontours (A-A')
Bound Brook OU4 RI/FS

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Figure 7-15

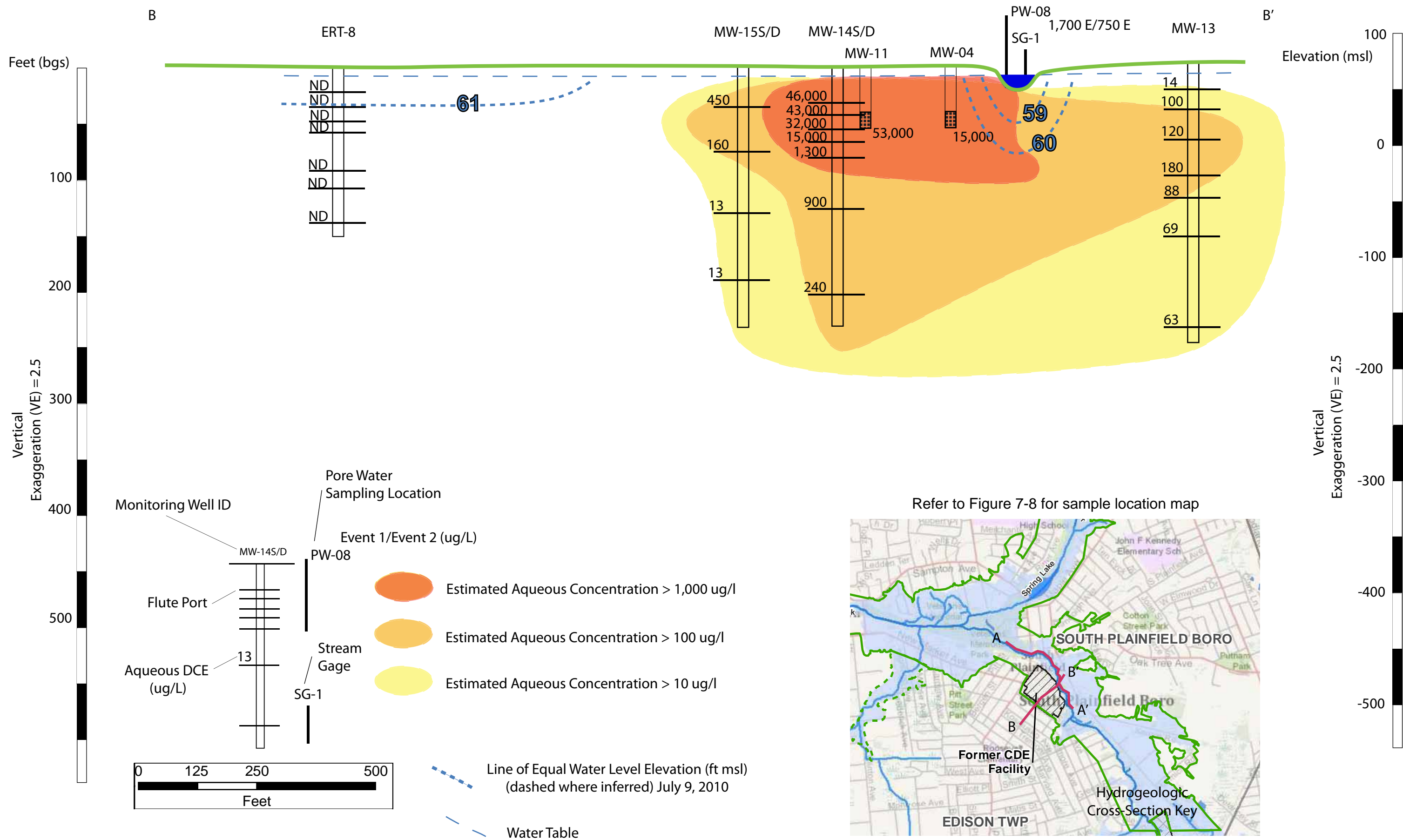


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OU3 Groundwater and OU4 Porewater TCE
Concentrations with Isocontours (B-B')
Bound Brook OU4 RI/FS

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Figure 7-16

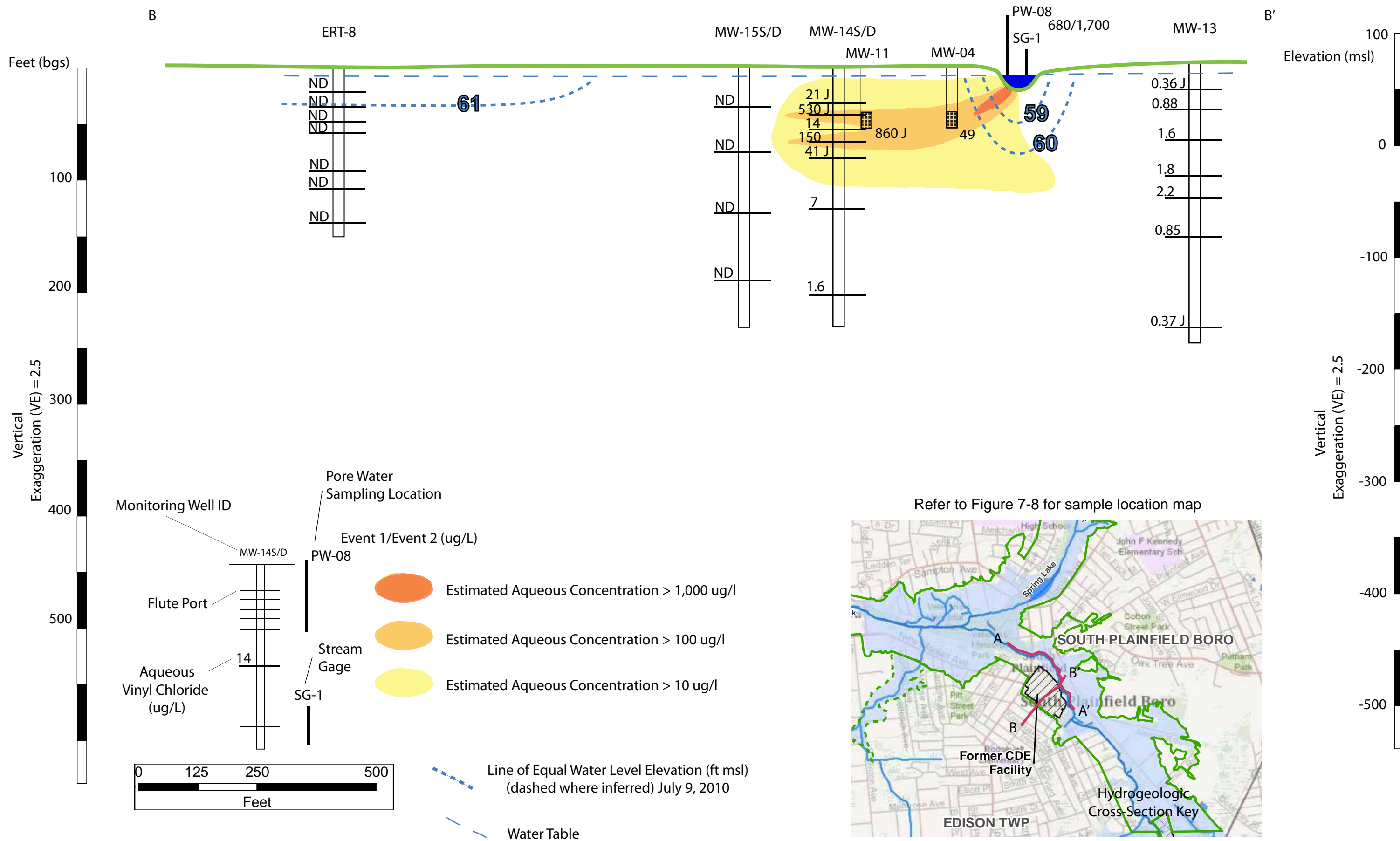


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OU3 Groundwater and OU4 Porewater DCE
Concentrations with Isocontours (B-B')
Bound Brook OU4 RI/FS

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Figure 7-17



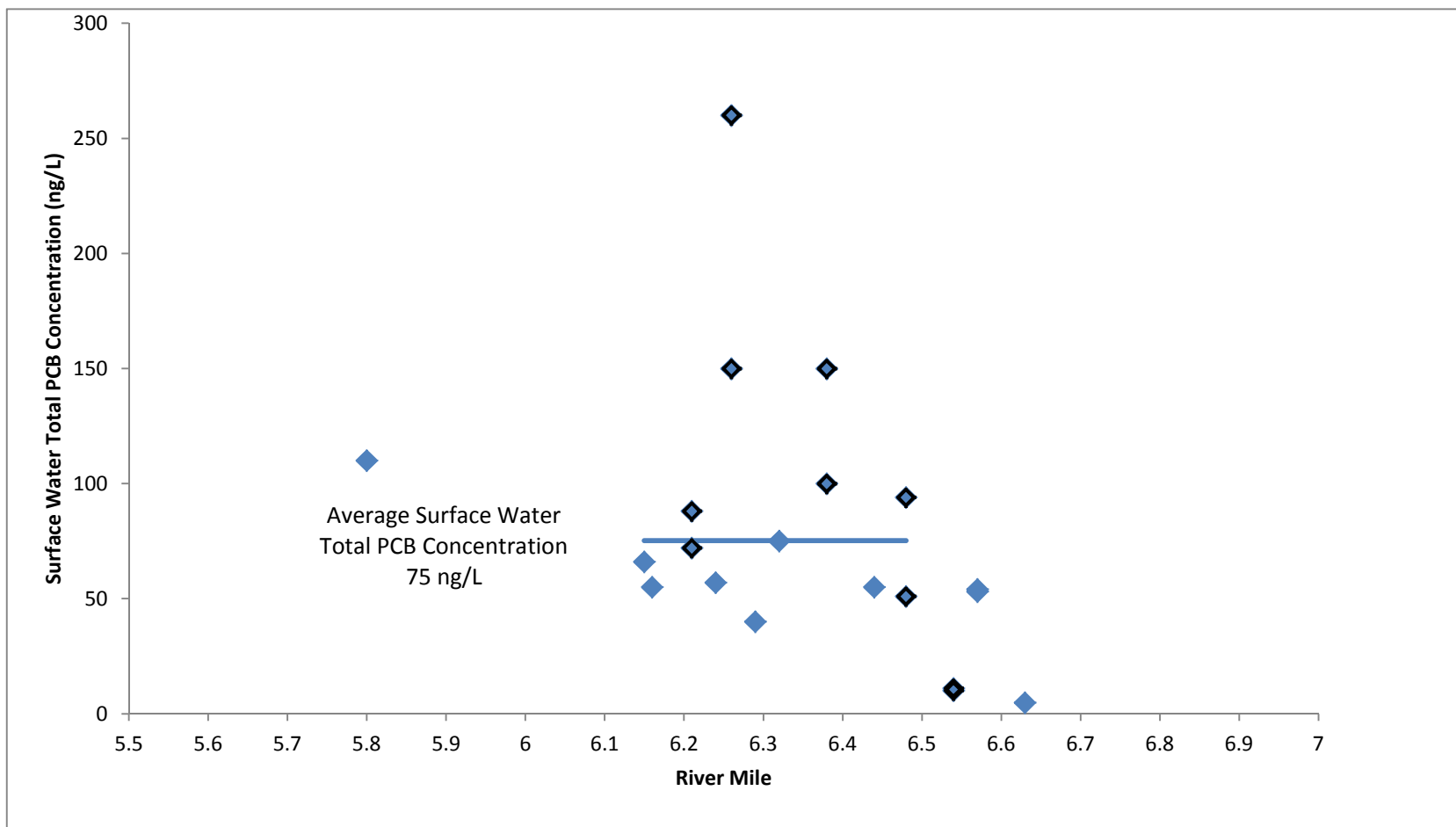
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OU3 Groundwater and OU4 Porewater Vinyl Chloride
Concentrations with Isocontours (B-B')

Bound Brook OU4 RI/FS

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Figure 7-18



LEGEND: ◆ Surface Water PCB Concentration (ng/L)
◆ Surface Water PCB Concentration (ng/L) - Colocated Sites

NOTES:

1. Surface water Total PCB concentrations measured using polyethylene passive samplers that were corrected for equilibrium concentrations. Deployed July 17-19, 2012, Retrieved August 21-24, 2012.
2. Total PCB represents the sum of congeners following Method 1668C. Nondetects were incorporated into the summation as half the detection limit.

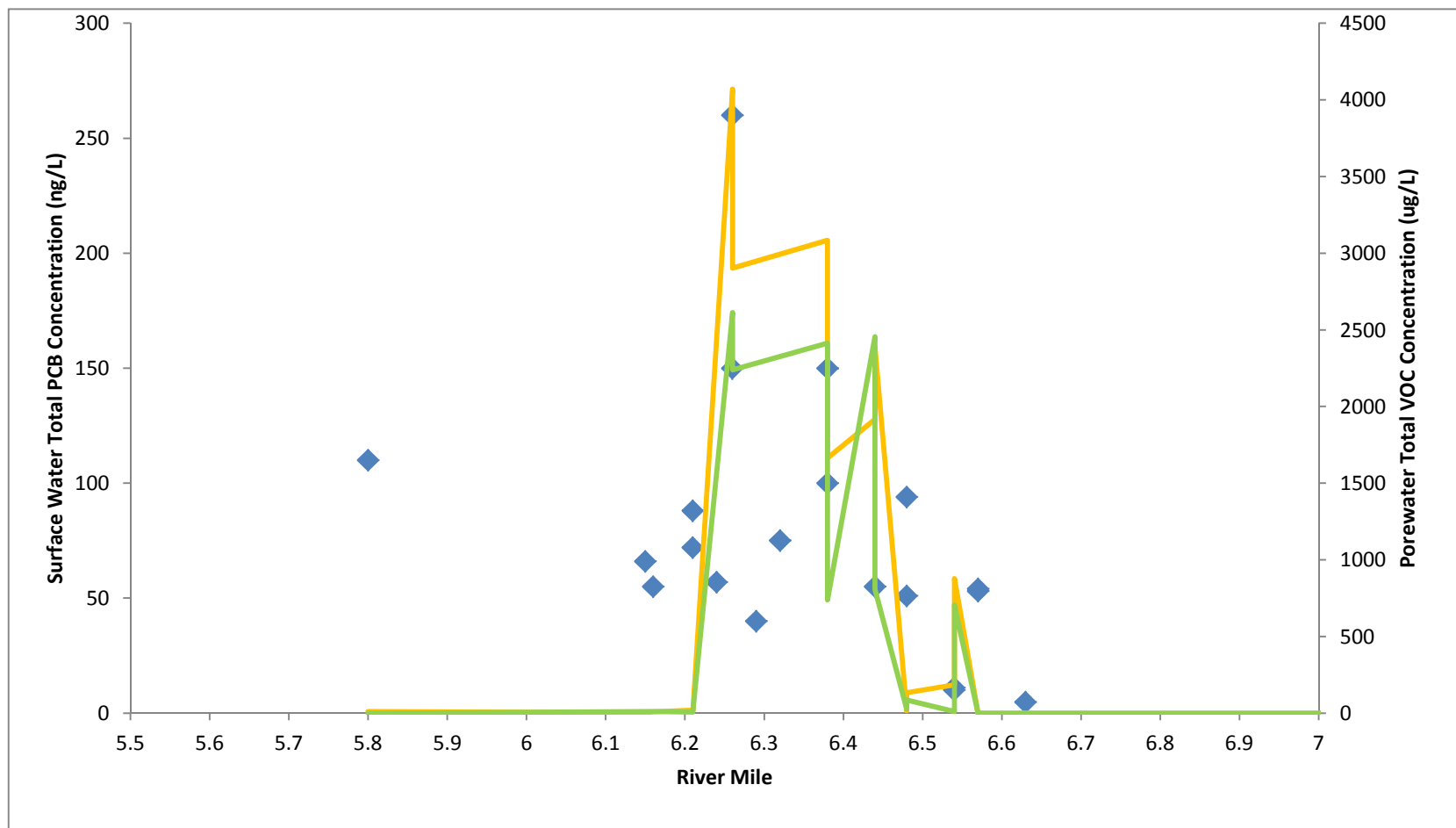


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**Bound Brook Surface Water Total PCB
Concentration near the Former CDE Facility**
Bound Brook OU4 RI/FS

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FIGURE 7-19



LEGEND: ◆ Surface Water PCB Concentration (ng/L)
 — Porewater VOC Concentration (ug/L) - Sampling Event 1
 — Porewater VOC Concentration (ug/L) - Sampling Event 2

NOTES:

1. Refer to Figure 7-11 and Figure 7-19 for additional notes on data.
2. Total PCB represents the sum of congeners following Method 1668C. Nondetects were incorporated into the summation as half the detection limit.
3. Total VOC represents the summation of detected TCL VOC analytes.

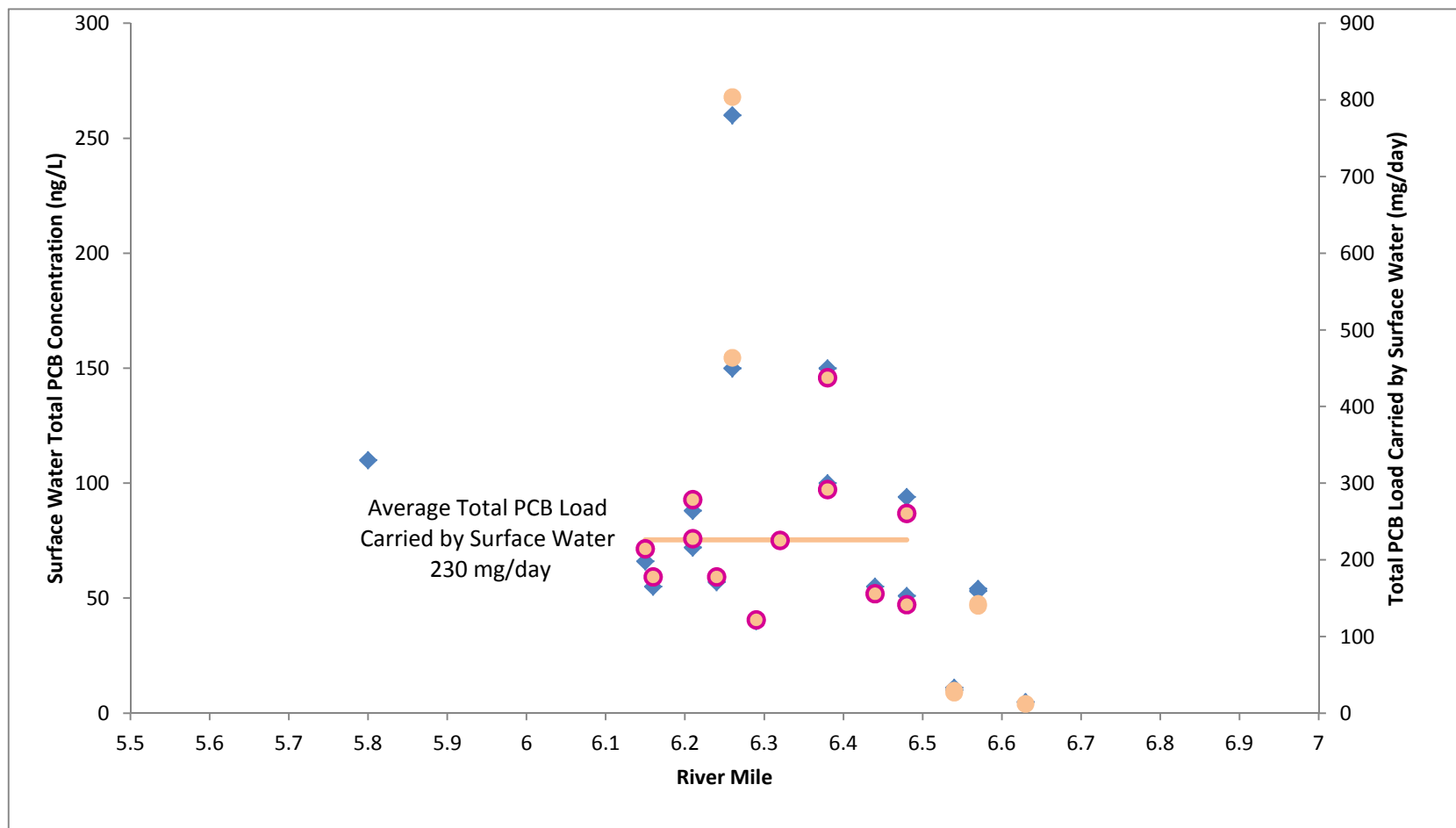


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**Bound Brook Surface Water Total PCB and
 Porewater Total VOC Concentrations near the
 Former CDE Facility**
Bound Brook OU4 RI/FS

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FIGURE 7-20



LEGEND:

- ◆ Surface Water PCB Concentration (ng/L)
- Total PCB Load Carried by Surface Water (mg/day)
- Total PCB Load Carried by Surface Water (mg/day) - included in average

NOTES:

1. Surface water Total PCB concentrations measured using polyethylene passive samplers that were corrected for equilibrium concentrations. Deployed July 17-19, 2012, Retrieved August 21-24, 2012.
2. Total PCB load carried by surface water was estimated using linear regression line between RM7.4 and RM6.0 during July 2011 stream flow survey to estimate baseflow.
3. Total PCB represents the sum of congeners following Method 1668C. Nondetects were incorporated into the summation as half the detection limit.

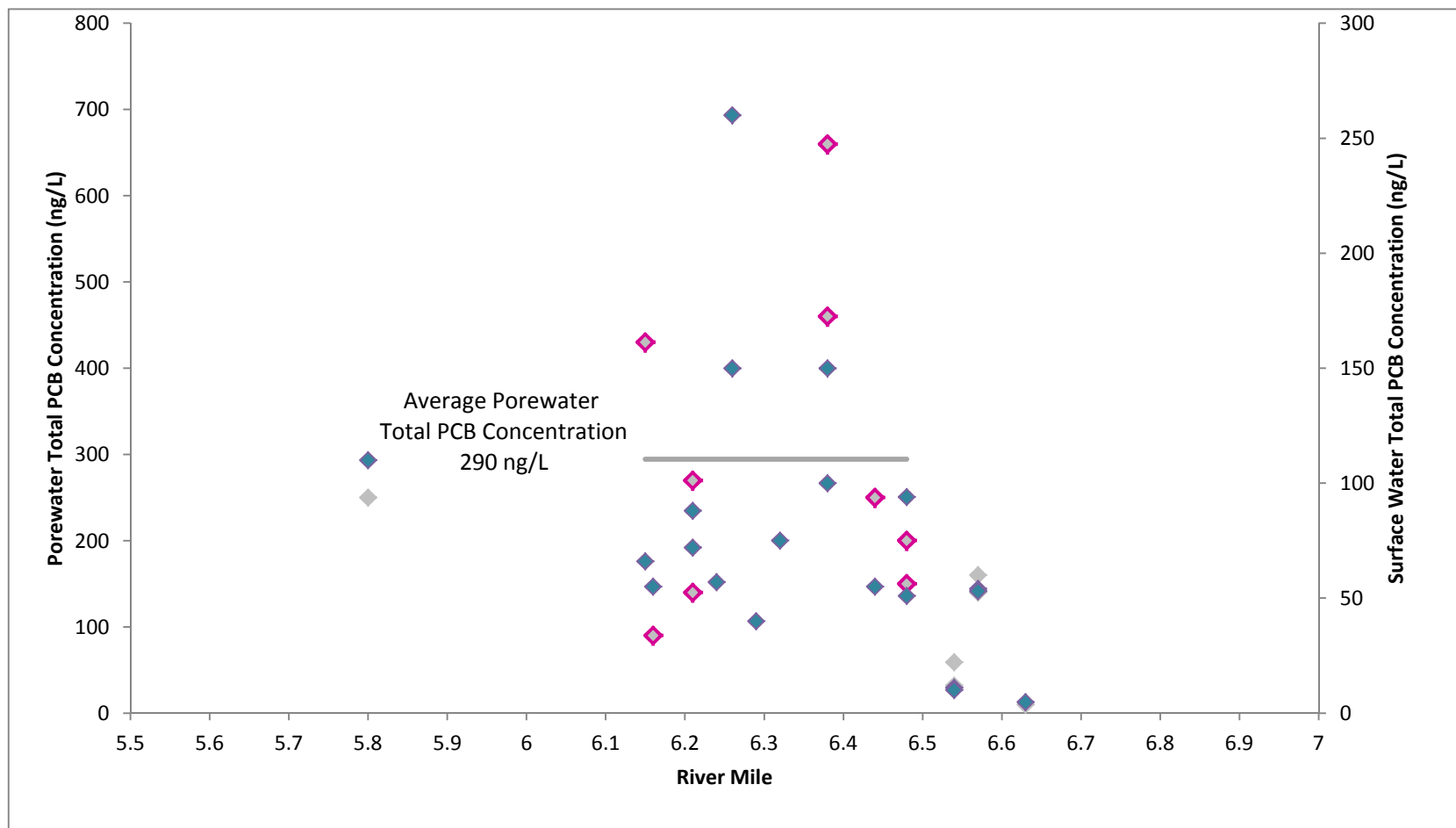


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Bound Brook Total PCB Load Carried by Surface Water
Bound Brook OU4 RI/FS

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FIGURE 7-21



LEGEND:

- ◆ Porewater PCB Concentration (ng/L)
- ◆ Porewater PCB Concentration (ng/L) - included in average
- ◆ Surface Water PCB Concentration (ng/L)

NOTES:

1. Surface water and porewater Total PCB concentrations measured using polyethylene passive samplers that were corrected for equilibrium concentrations. Deployed July 17-19, 2012, Retrieved August 21-24, 2012.
2. Total PCB represents the sum of congeners following Method 1668C. Nondetects were incorporated into the summation as half the detection limit.
3. Porewater concentrations at locations PW13 and PW14 not presented on figure.
4. Porewater concentrations represent 0-5 cm depth in sediment bed.

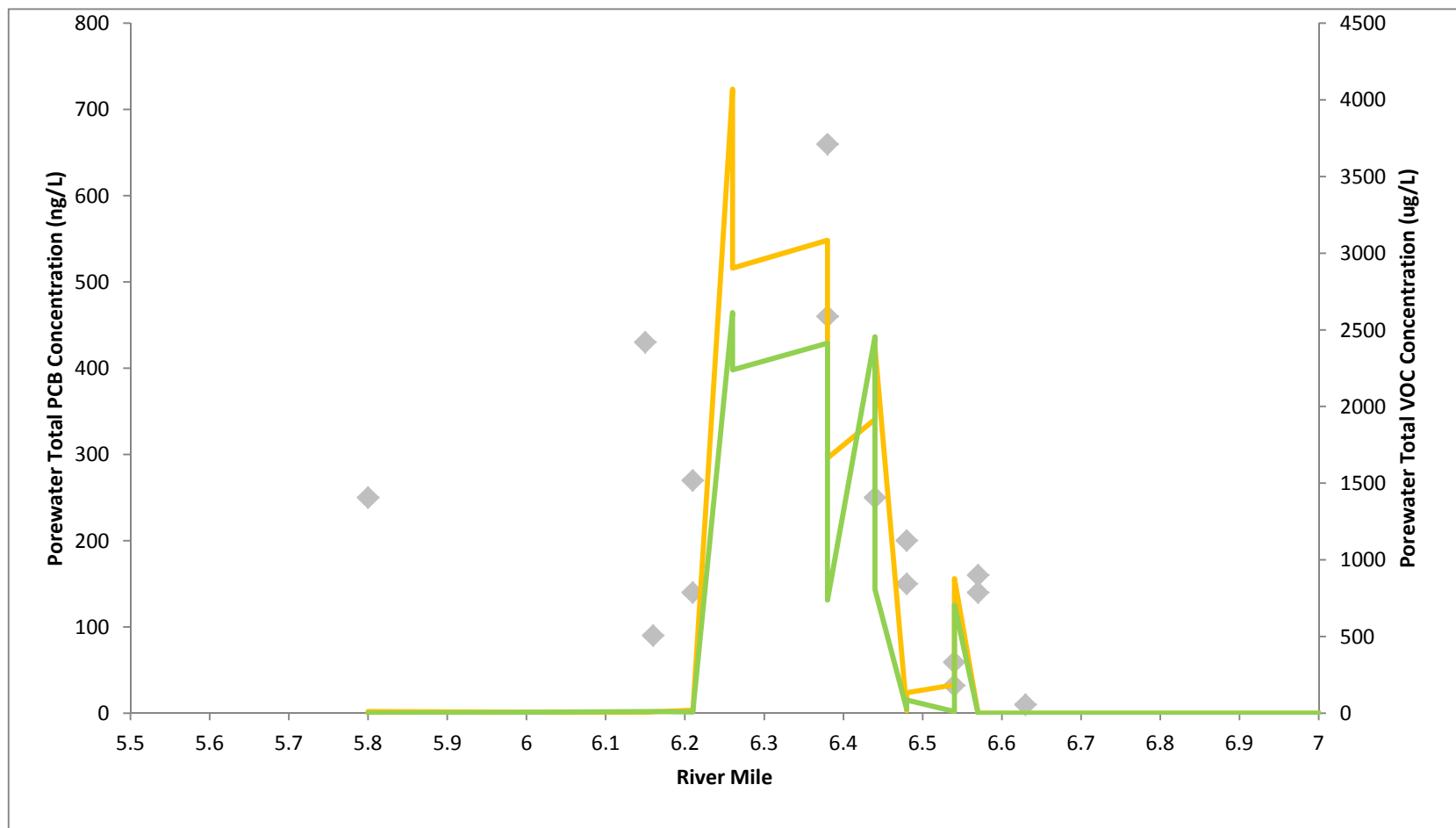


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**Bound Brook Porewater (0-5 cm) and Surface
Water Total PCB Concentrations**
Bound Brook OU4 RI/FS

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FIGURE 7-22



LEGEND: ◆ Porewater PCB Concentration (ng/L)
 — Porewater VOC Concentration (ug/L) - Sampling Event 1
 — Porewater VOC Concentration (ug/L) - Sampling Event 2

NOTES:
 1. Refer to Figure 7-11 and Figure 7-22 for additional notes on data.
 2. Total PCB represents the sum of congeners following Method 1668C. Nondetects were incorporated into the summation as half the detection limit.
 3. Total VOC represents the summation of detected TCL VOC analytes.
 4. Porewater concentrations at locations PW13 and PW14 not presented on figure.
 5. Porewater concentrations represent 0-5 cm depth in sediment bed.

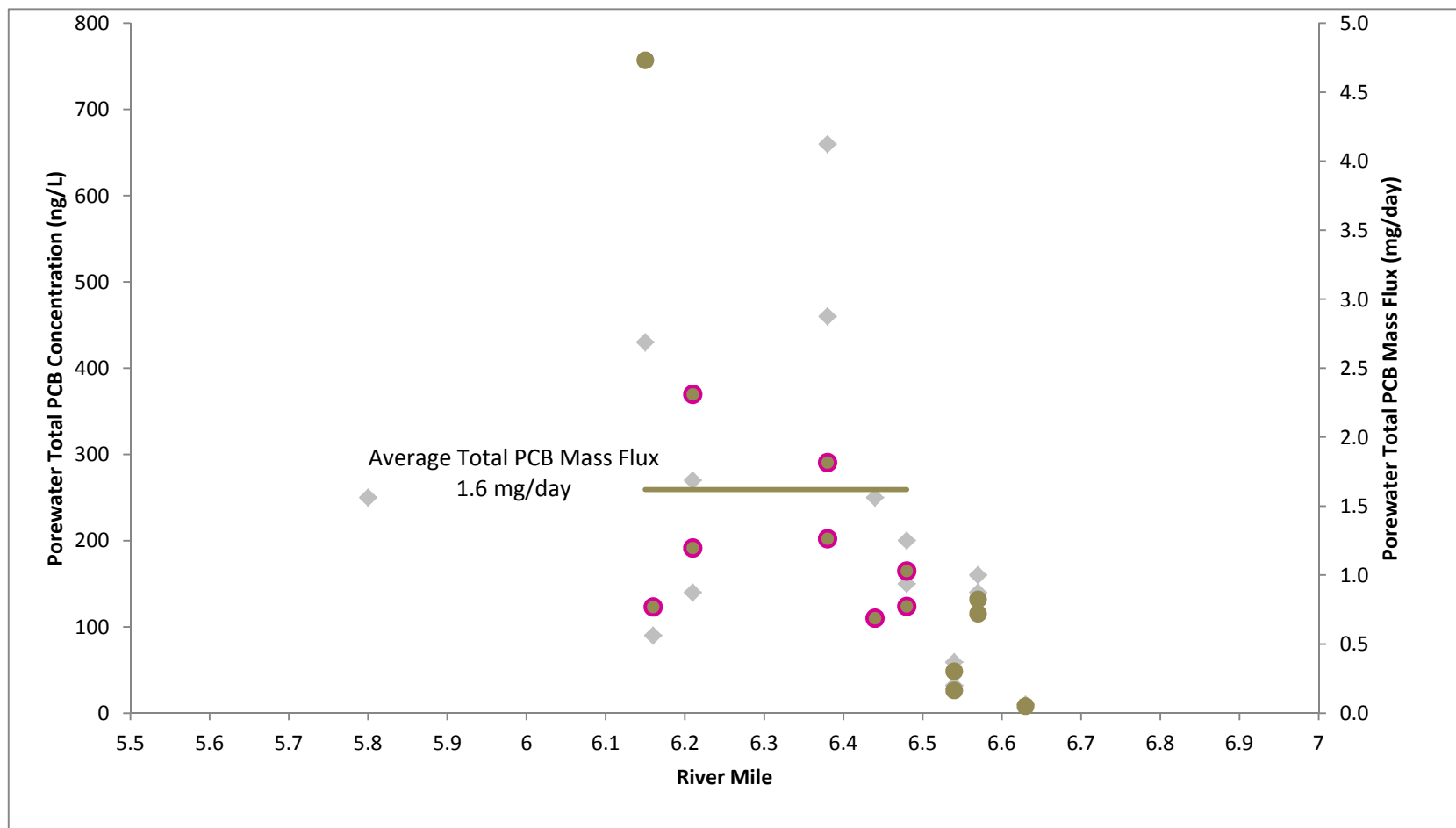


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**Bound Brook Porewater Total PCB and Porewater
 Total VOC Concentrations near the Former CDE
 Facility**
Bound Brook OU4 RI/FS

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FIGURE 7-23



LEGEND:

- ◆ Porewater PCB Concentration (ng/L)
- Porewater PCB Mass Flux (mg/day)
- Porewater PCB Mass Flux (mg/day) - included in average

NOTES:

1. Refer to Figure 7-22 for additional notes on data.
2. Total PCB represents the sum of congeners following Method 1668C. Nondetects were incorporated into the summation as half the detection limit.
3. Porewater concentrations at locations PW13 and PW14 not presented on figure.
4. Porewater concentrations represent 0-5 cm depth in sediment bed.

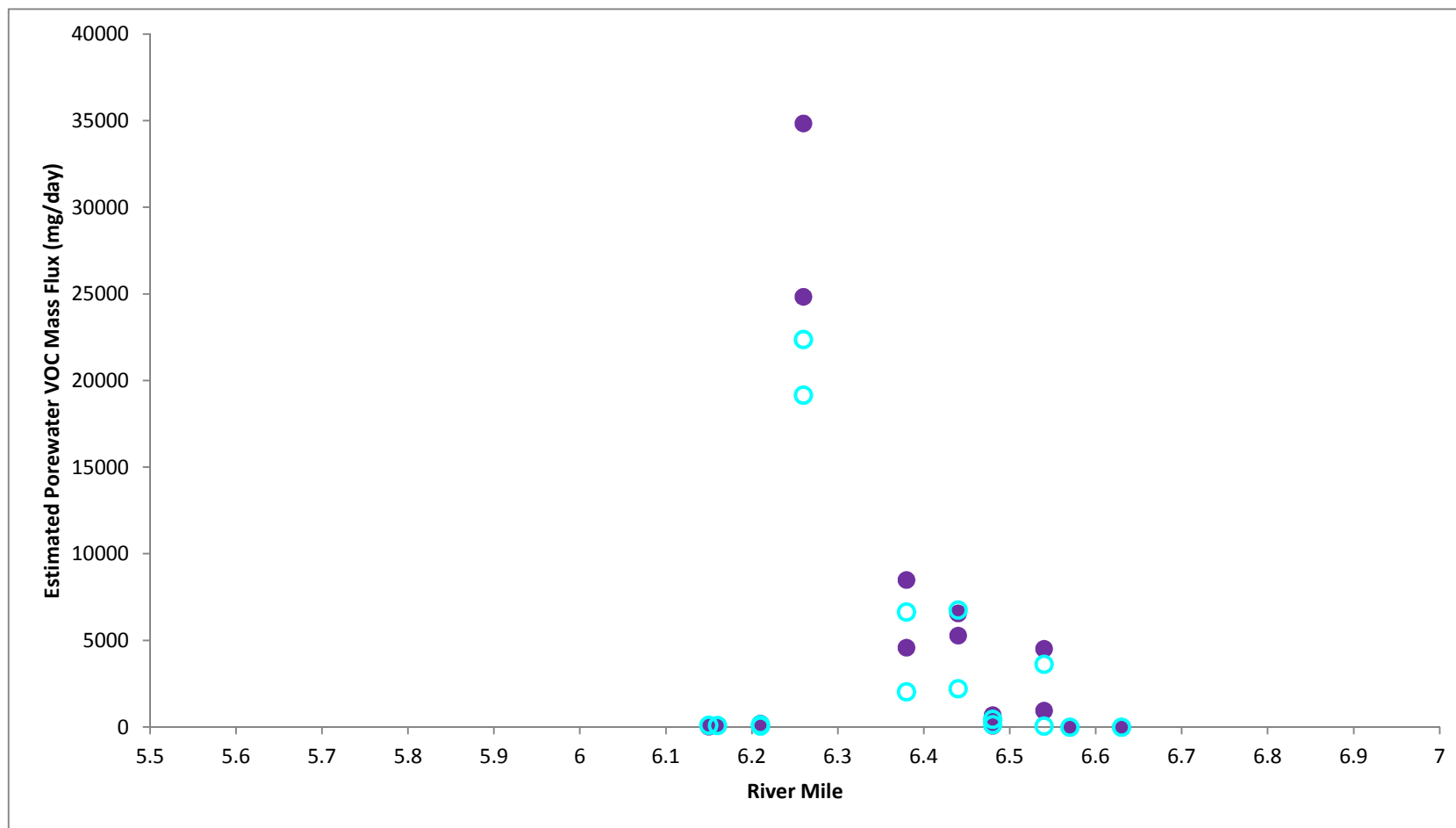


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**Bound Brook Porewater Total PCB Concentration
and Mass Flux**
Bound Brook OU4 RI/FS

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FIGURE 7-24



LEGEND:

- Porewater VOC Mass Flux (mg/day) - Sampling Event 1
- Porewater VOC Mass Flux (mg/day) - Sampling Event 2

NOTES:

1. Refer to Figure 7-11 for additional notes on data.
2. Total VOC represents the summation of detected TCL VOC analytes.
3. Impacts to surface water or calculation of a total VOC mass load are not presented due to the volatile nature of these compounds.



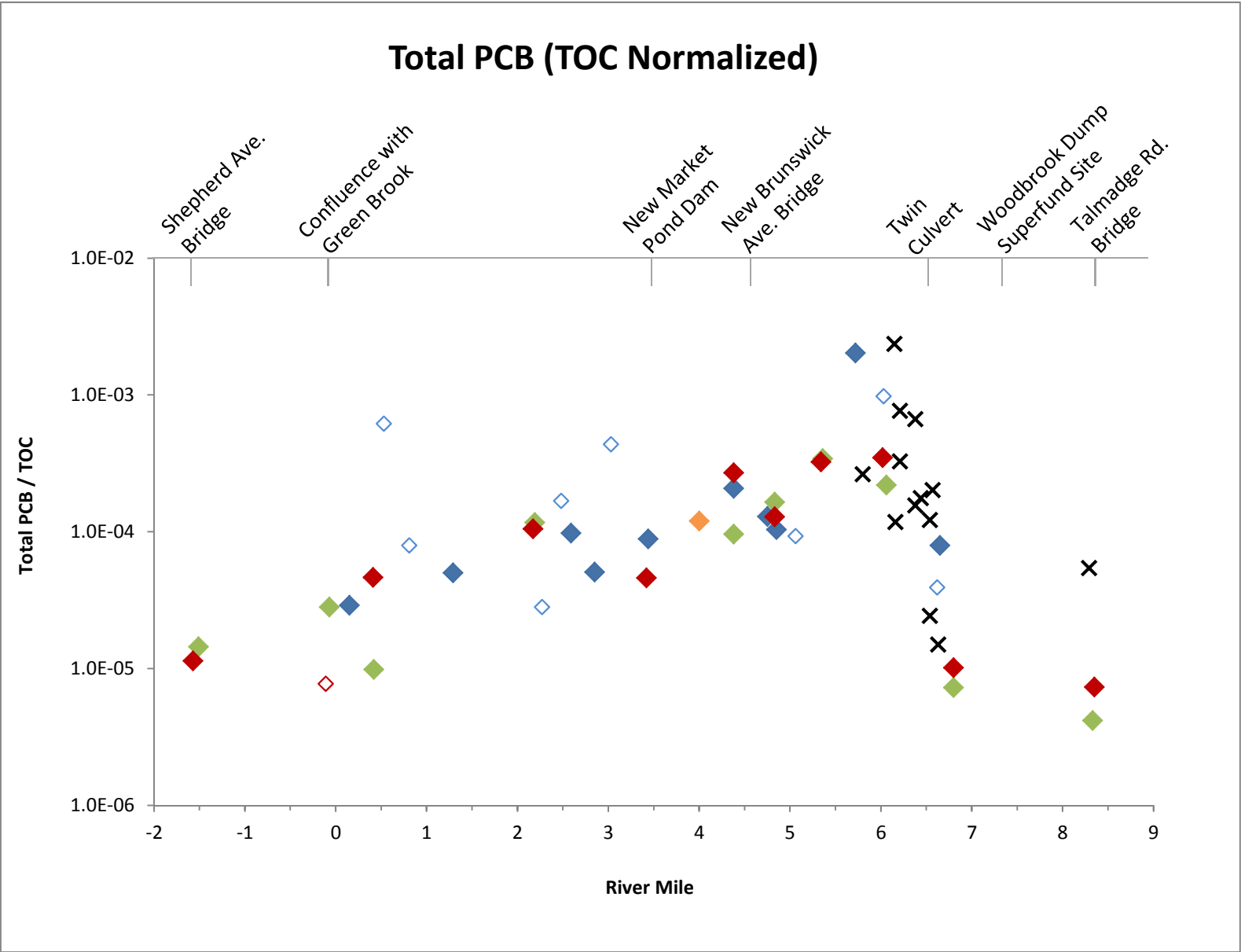
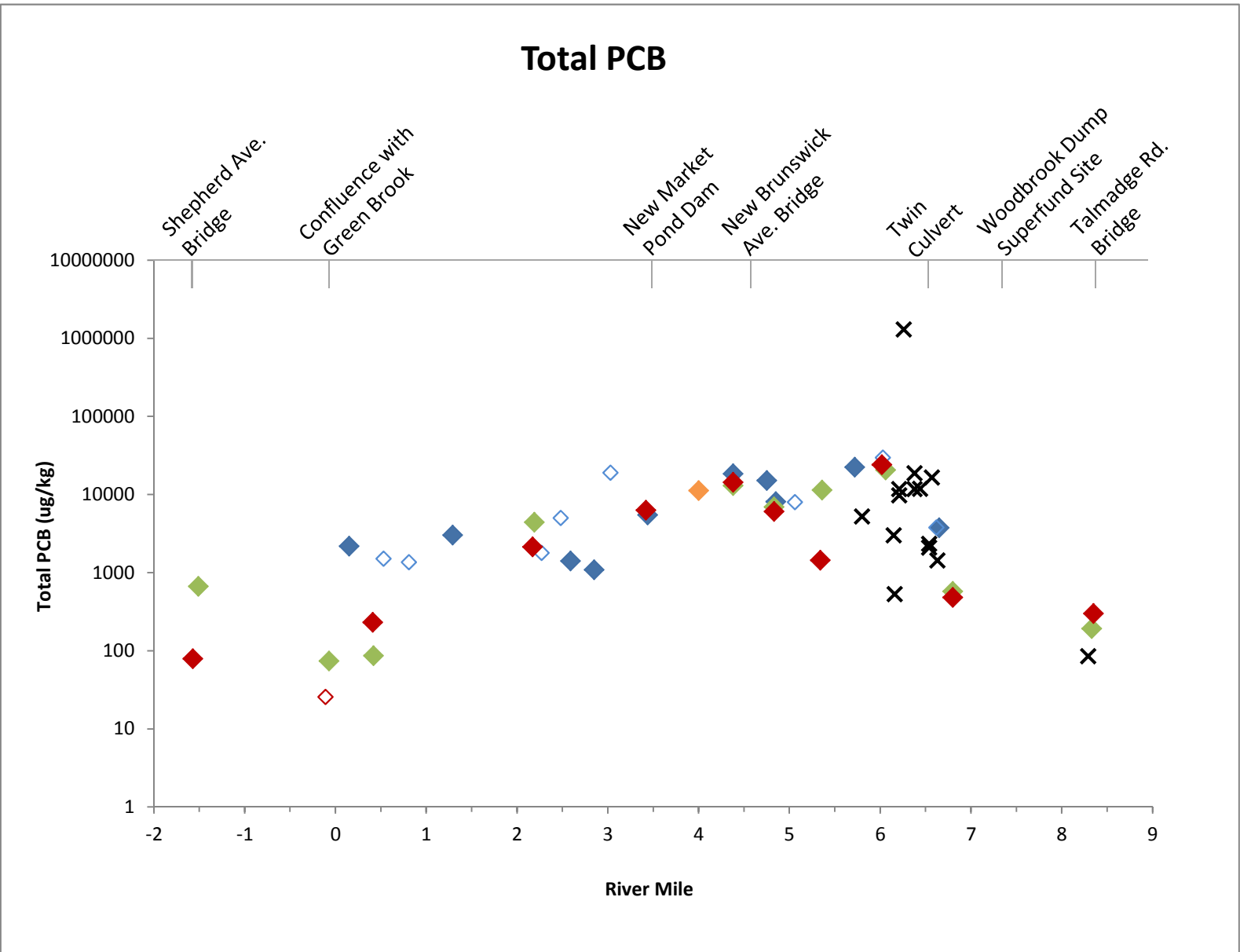
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Bound Brook Porewater Estimated Total VOC
Mass Flux
Bound Brook OU4 RI/FS

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FIGURE 7-25

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LEGEND:

- ◆ April 2011 Surface Sediment (Be7 bearing)
- ◇ April 2011 Surface Sediment (non-Be7 bearing)
- ◆ April 2011 High Resolution Core Top (Be7 bearing)
- ◆ Nov 2011 Surface Sediment (Be7 bearing)
- ◆ Nov 2011 Sediment Trap (Be7 bearing)
- ◇ Nov 2011 Sediment Trap (non-Be7 bearing)
- ✕ Aug 2012 Porewater Co-located Surface Sediment (0-5 cm)

TOC denotes Total Organic Carbon

NOTES:

1. Filled symbols indicate the presence of Be7 at a concentration greater than 0.5 pCi/g; open symbols indicate a Be7 concentration less than 0.5 pCi/g.
2. For samples with field duplicates, the average concentration is presented.
3. High resolution core top represents the average of the first two slices (0-6 cm total) since both slices were Be7 bearing and had a moisture content of approximately 70 percent.
4. Total PCB represents the sum of congeners. Nondetects are incorporated into the summation as zero.

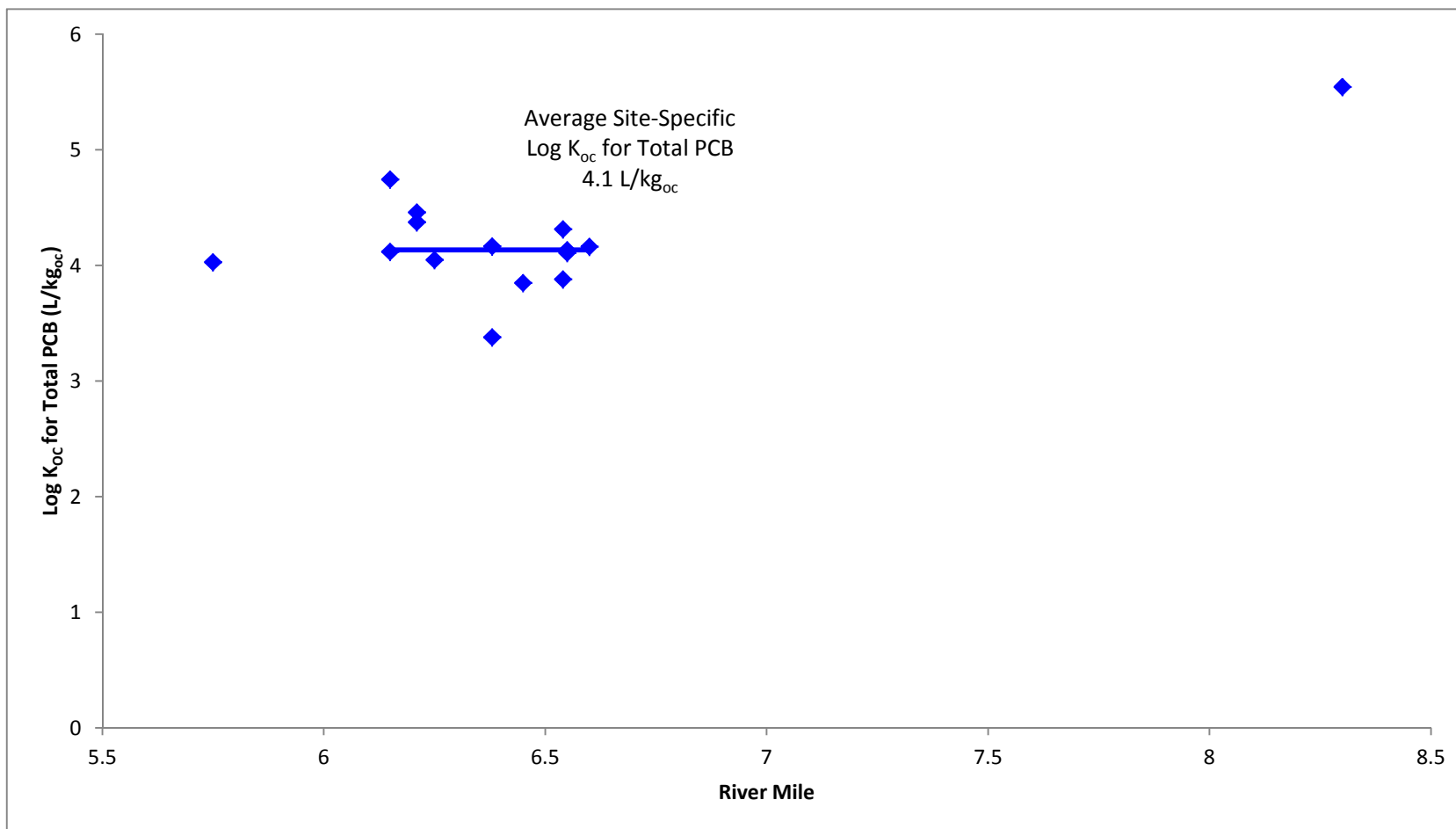


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Total PCB Surface Sediment Concentration
Bound Brook OU4 RI/FS

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FIGURE 7-26



LEGEND:

- ◆ Site-Specific Log K_{oc} Values
- Average Site-Specific Log K_{oc} Value

NOTES:

1. Log K_{oc} values for Total PCB in co-located sediment and porewater samples (0-5 cm depth interval) are presented.
2. Site-specific partitioning coefficients are normalized to sediment organic carbon content.

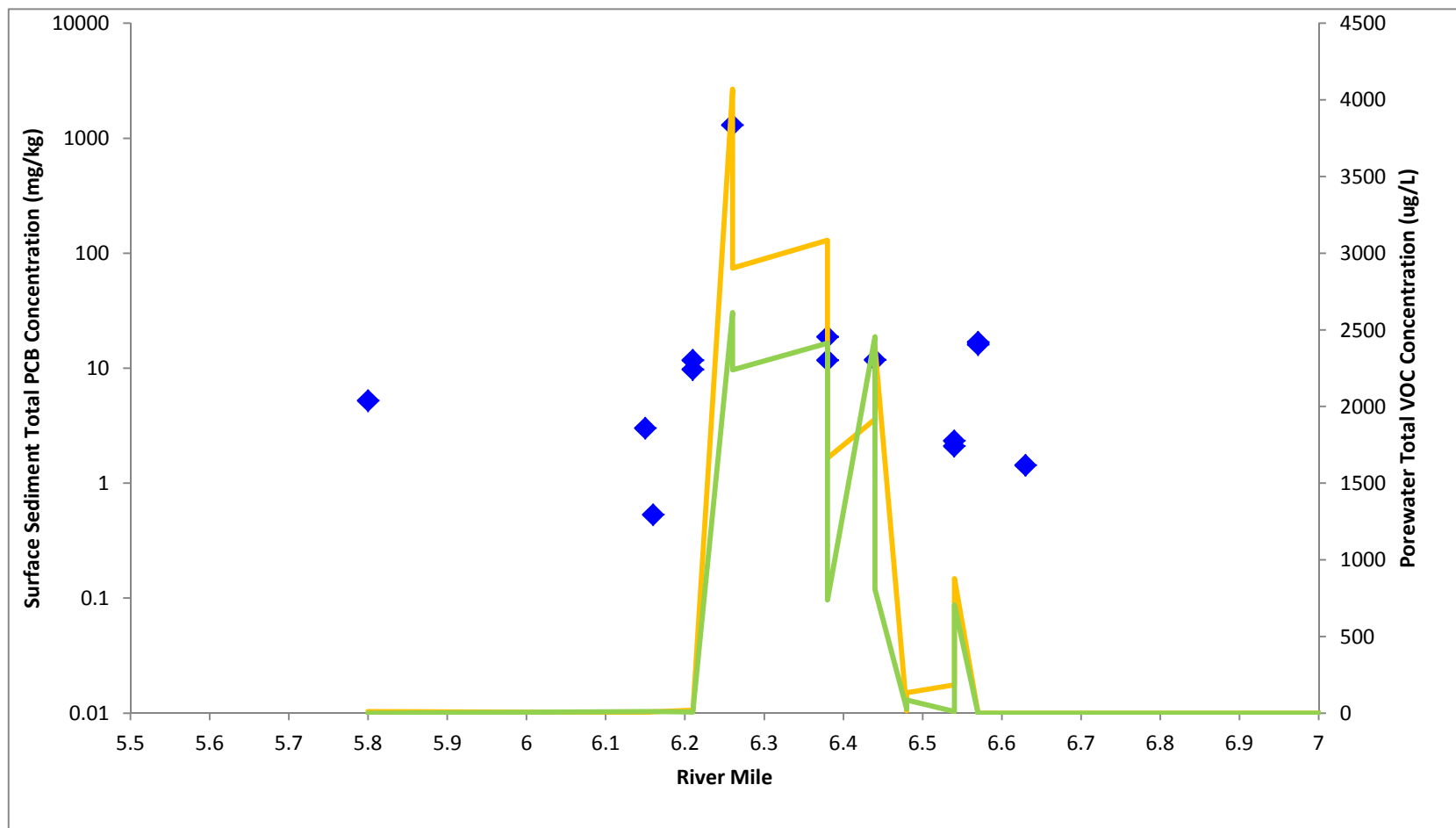


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Site-Specific Log K_{oc} Values for Porewater-
Sediment Samples (0-5 cm)
Bound Brook OU4 RI/FS

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FIGURE 7-27



LEGEND: ◆ Surface Sediment Total PCB Concentration (mg/kg)
 — Porewater VOC Concentration (ug/L) - Sampling Event 1
 — Porewater VOC Concentration (ug/L) - Sampling Event 2

NOTES:

1. Refer to Figure 7-11 for additional notes on data.
2. Surface sediment samples were co-located with polyethylene passive samplers and were collected at the time of passive sampler retrieval (August 21-24, 2012).
3. Total PCB represents the sum of congeners following Method 1668C. Nondetects were incorporated into the summation as zero.
4. Total VOC represents the summation of detected TCL VOC analytes.
5. Surface sediment concentrations represent 0-5 cm depth in sediment bed.



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**Bound Brook Surface Sediment Total PCB and
 Porewater Total VOC Concentration near the
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FIGURE 7-28